peterson energy
management, inc.

November 10, 2001

Mr. Kent Gilbert
V.P. Exploration & Production
Wattenberg Disposal, LLC
1675 Broadway, Suite 2800
Denver, CO 80202

RE: Suckla Farms Injection Well #1
EPA Class I Permit CO1516-02115
Temperature Log Review

Dear Kent:

In this report we detail the results of the temperature logs run by ADI Wireline on October 26th & November 1st, 2001. A base pass was run on October 26th after the well had been shut in for 3 hours. This pass shows differential warming above the perforated interval similar to the temperature log run July 12, 1993, with fluid storage beginning at 9350'. A possible storage anomaly occurs just below the packer at 9000' WLM, but this is more likely an artifact related to transient wellbore effects in the vicinity of the packer. After injecting thirty minutes, a second pass was made while injecting. This pass showed all fluid exiting in the zone, and no anomalies noted above the zone. All perforations appeared to be taking fluid.

After the six day pressure falloff test, a static temperature log was again run, showing a normal static gradient to a fluid storage top at 9215'. No anomaly was noted in the vicinity of the packer, confirming that the response seen on the first pass October 26th was indeed a transient event. Three temperature passes were made after resuming injection. All three passes showed a normal profile, with no anomalies noted, and the entire zone taking fluid. It is possible that the cooling seen starting at 9215' on Run #1 November 1st indicates fluid could be communicating up to this point (61' over the zone), but no higher. However, none of the other passes show any storage above the perforated interval. In addition, the initial static temperature log run July 12, 1993 showed similar storage anomalies above the zone at 9190' and 9235'. These were proved to be artifacts by the subsequent tracer survey.

We were unable to locate a wireline company that still runs radioactive tracer surveys in time for this study. Regulatory difficulties involved in handling RA material have led many companies to quit offering the service.

petroleum engineering

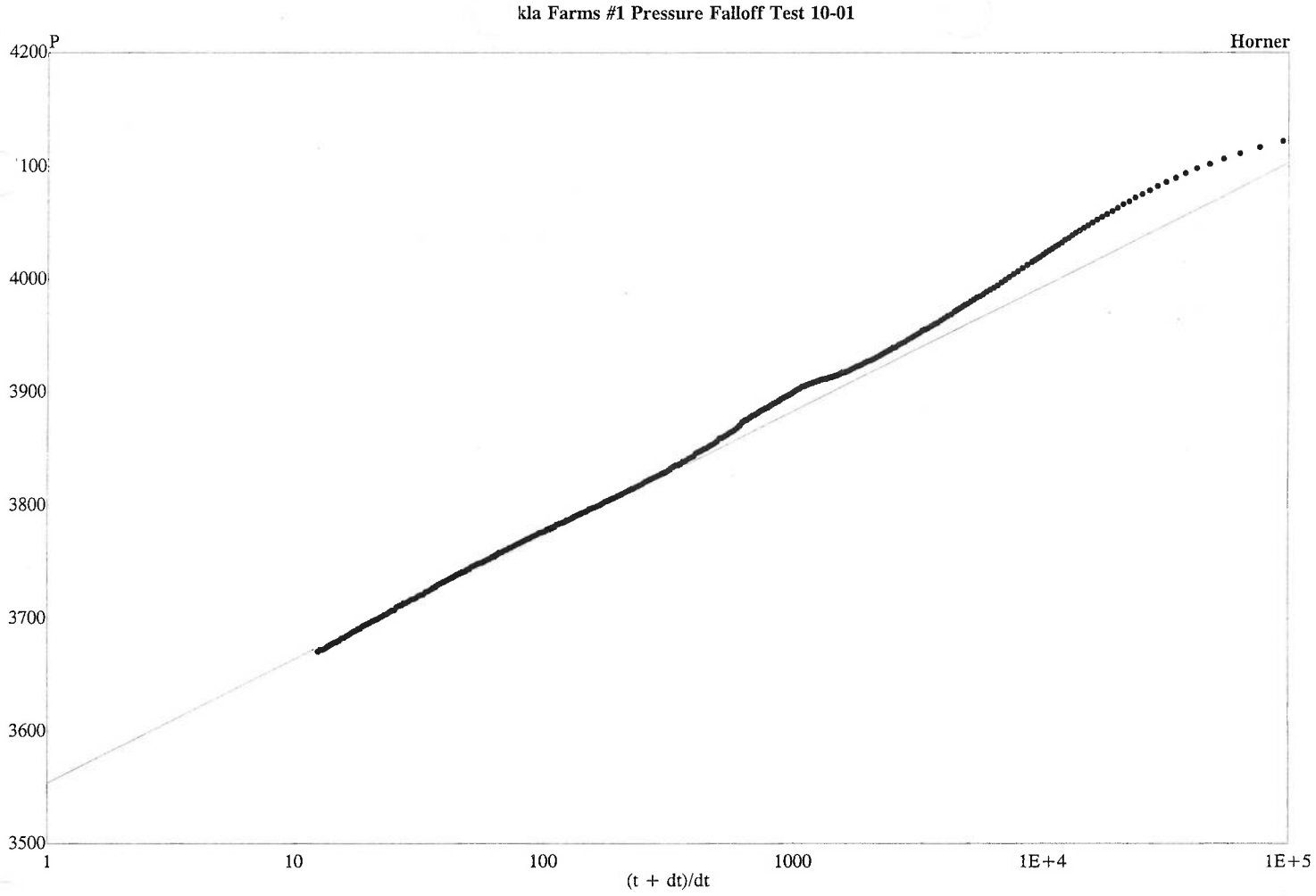
1805 Morning Drive, Loveland, CO 80538 (970) 669-7411 Fax (970) 669-4077

It is our opinion that the temperature logs run October 26th and November 1st show conclusively that all injection fluids are being confined to the 9276'-9418' perforated interval.

We appreciate the opportunity to be of service. Please contact us if we may answer any questions.

Sincerely,

Andrew S. Peterson, PE
President



Suckla Farms #1 Pressure Falloff Test 10-01

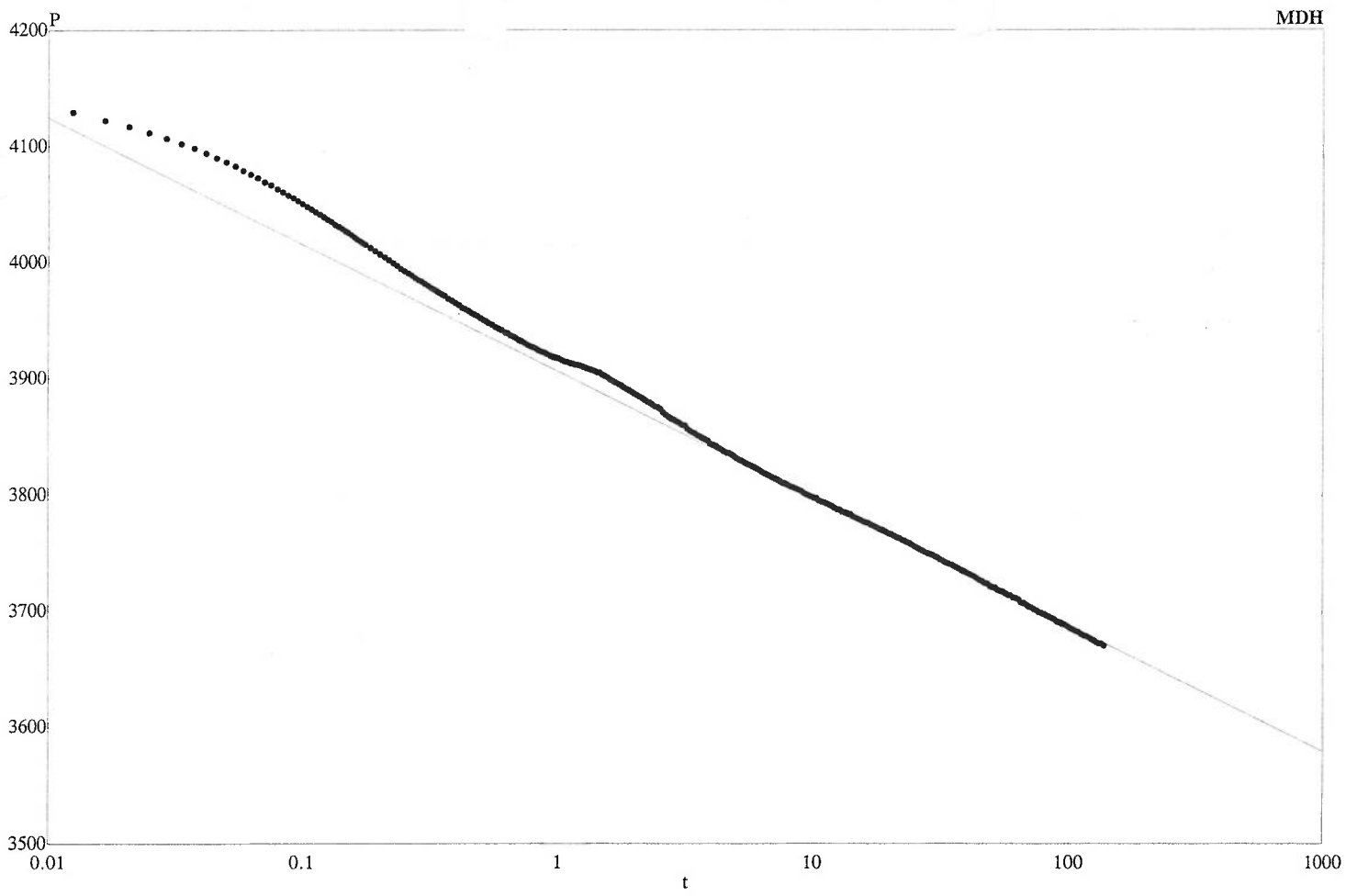
Analysis Results: Horner

Parameters:

Slope = 109.914
m(1 hr) = 3905.95
Prd Time: = 1580 hr

Calculated Values:

kh = 676.66 md-ft
k = 4.76521 md
Skin = -2.9094
P* = 3554.3 psi



Suckla Farms #1 Pressure Falloff Test 10-01

Analysis Results: MDH

Parameters:

Slope = -109.132

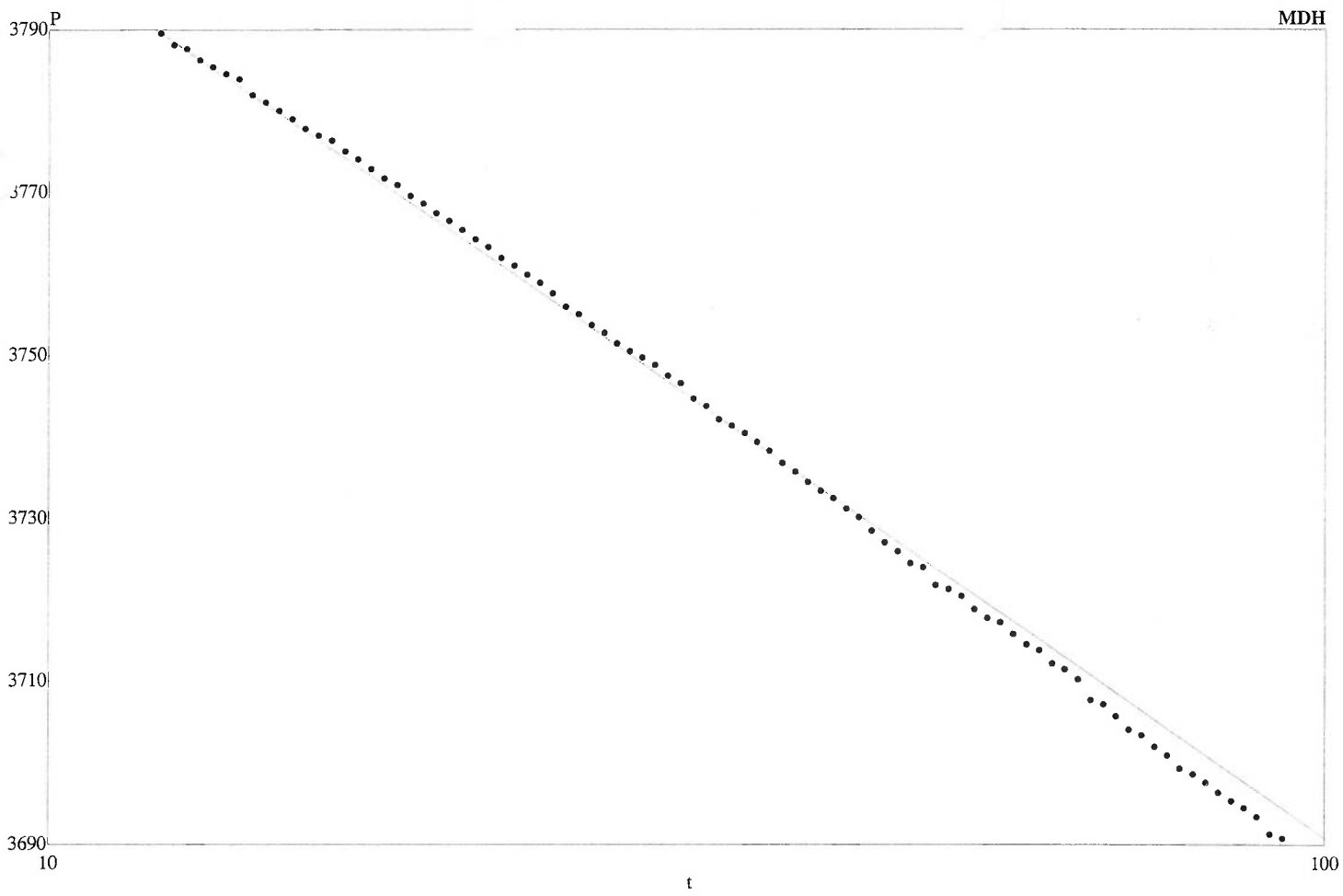
P 1 hr: = 3906.6

Calculated Values:

kh = 681.509 md-ft

k = 4.79936 md

Skin = -2.89754



Suckla Farms #1 Pressure Falloff Test 10-01

Analysis Results: MDH

Parameters:

Slope = -108.127

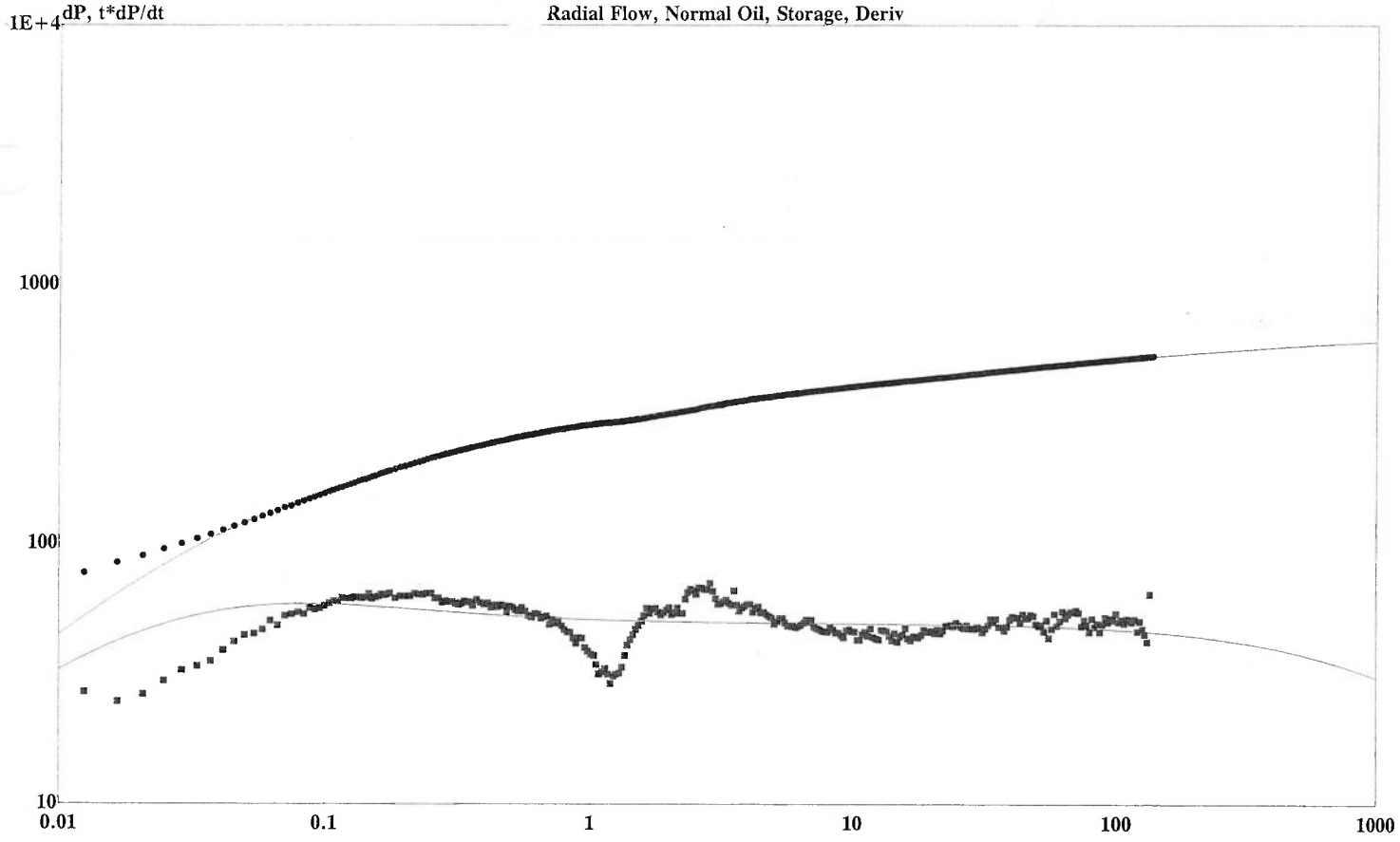
P 1 hr: = 3907.15

Calculated Values:

kh = 122.158 md-ft

k = 0.86027 md

Skin = -1.32122



Suckla Farms #1 Pressure Falloff Test 10-01

Analysis Results: Radial Flow, Normal Oil, Storage, Deriv

Dimensionless Parameters:

tD/CD(1) = 75.379
pD(1) = 0.009885
CaDe2S = 1.7888
CD/CaD = 1

Calculated Values:

Std Dev = 4.2348
k = 4.4972 md
kh = 638.6 md-ft
S = -3.181
CD = 1036

Lightning Wireline, Inc.
P.O. Box 1531
Loveland, Colorado 80539

Tel: (970) 669-8059 Fax: (970) 669-4077

B.H.P. TEST REPORT

Company : WATTENBERG DISPOSAL

Well Number	: SUCKLA FARMS #1	Packr set at	: 9014
Test date	: 10/26/01-11/01/01	Fluid level @	
Lease	: SUCKLA	Perforations	: 9276'-9418'
Field	: WATTENBERG	DW Tbg press	: 0
County	: WELD	DW Csg press	: 0
State	: COLORAOD	Stab flw rate	: -300
Location	: SECTION 10-T1N-R67W	Instrument #	: 21063
Formation	: LYONS	Tested by	: ASP/LG/JMR
Total depth	@ 9448	Calculated by	: ASP
Atmos press.	: 12.3	Gauge set at	: 9005.1
Tubing size	: 2 7/8	B.H. Temp. F	: 242

Test type:

Flowing Pressure Gradient	-	No
Bottom Hole Pressure Build-up Test	-	Yes
Bottom Hole Pressure Draw-Down Test	-	No
Shut-in Pressure Gradient	-	No

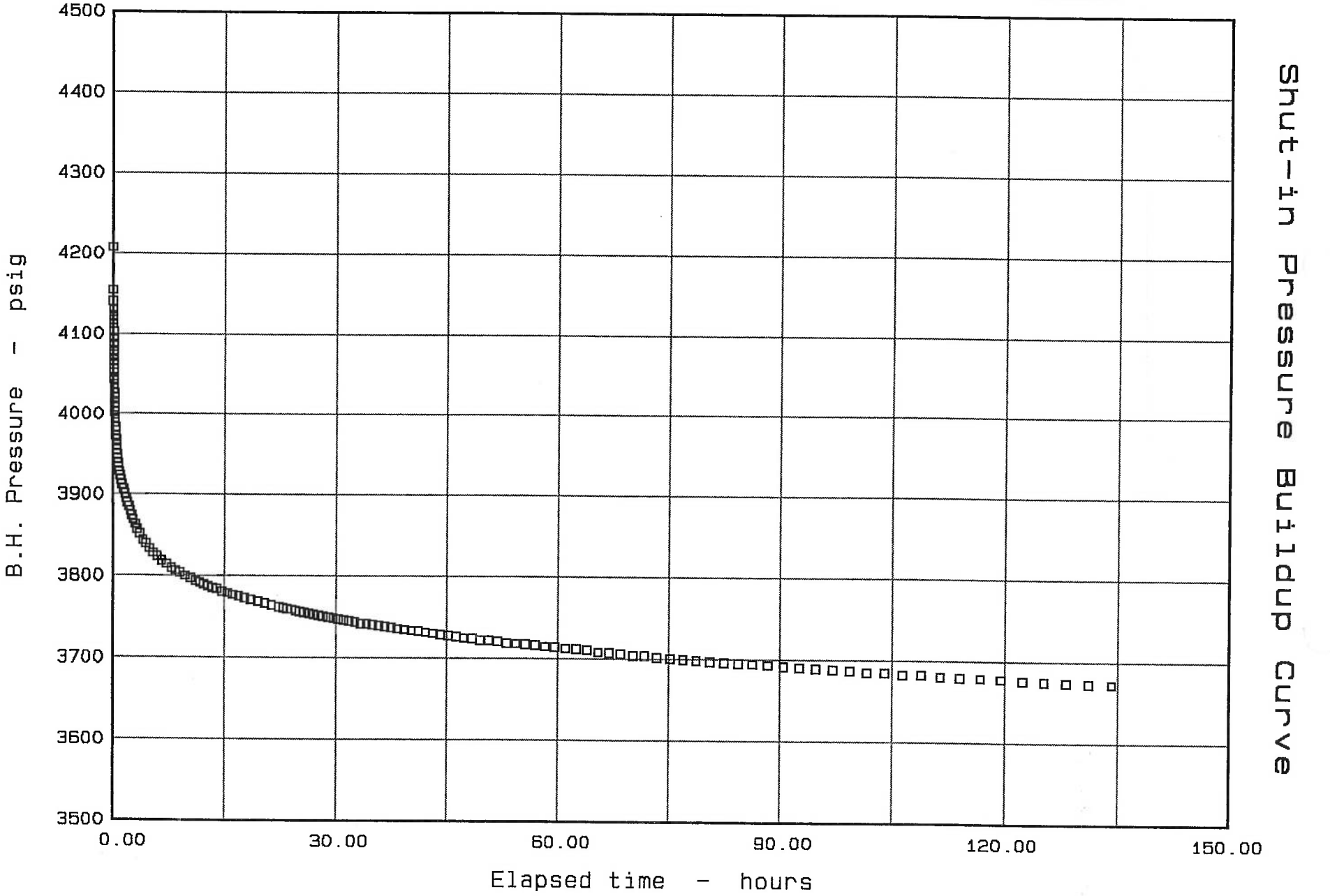
Data File : SUCK

Lightning Wireline, Inc.

Company : WATTENBERG DISPOSAL
Lease : SUCKLA
County : WELD

Well # : SUCKLA FARMS #1
Field : WATTENBERG
State : COLORAOD

Location : SECTION 10-T1N-RE
Test date : 10/26/01-11/01/01
File - SUCKLA2

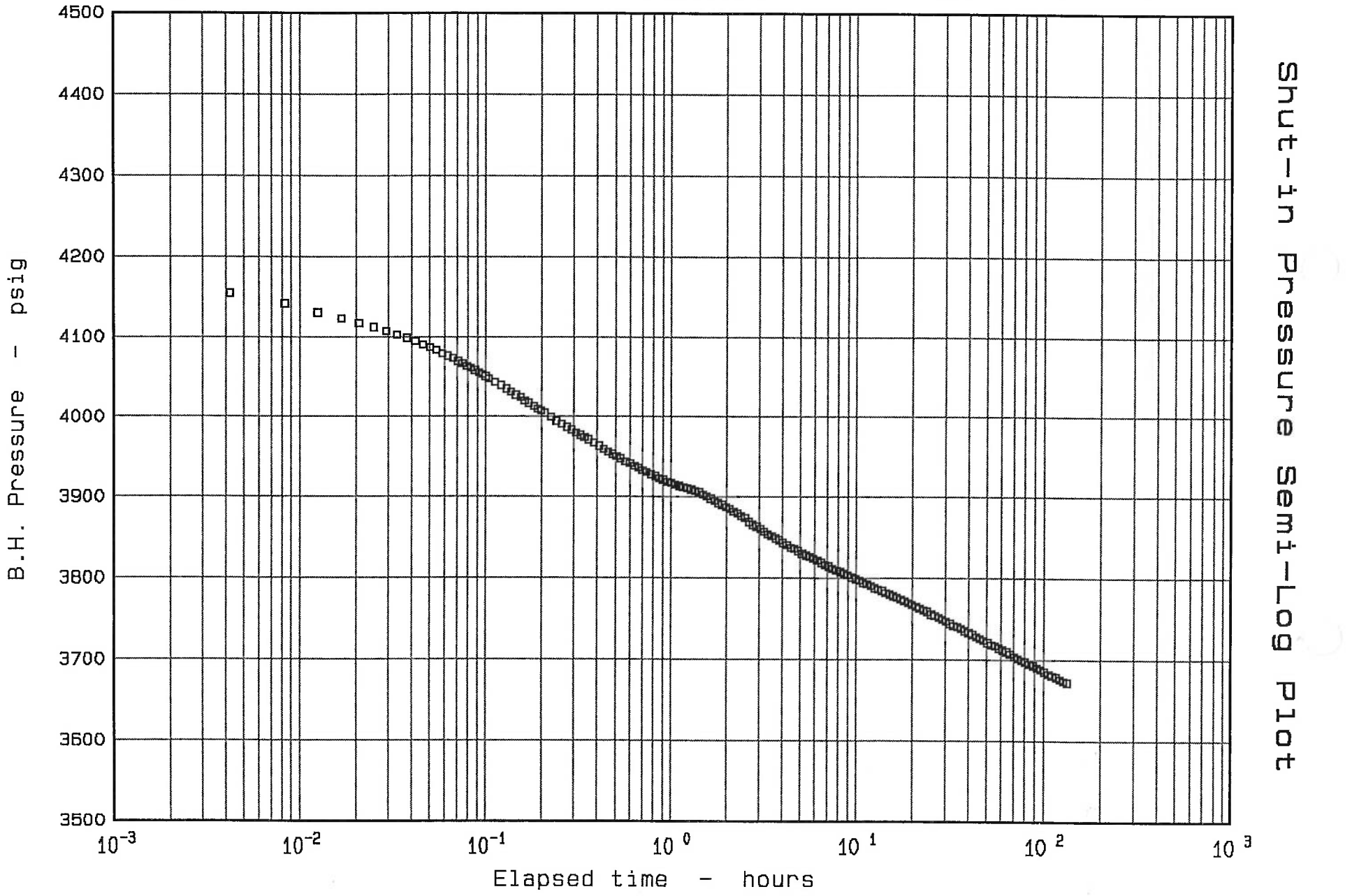


Lightning Wireline, Inc.

Company : WATTENBERG DISPOSAL | Well # : SUCKLA FARMS #1 | Location : SECTION 10-T1N-RE

Lease : SUCKLA | Field : WATTENBERG | Test date : 10/26/01-11/01/01

County : WELD | State : COLORAOD | File - SUCKLA2

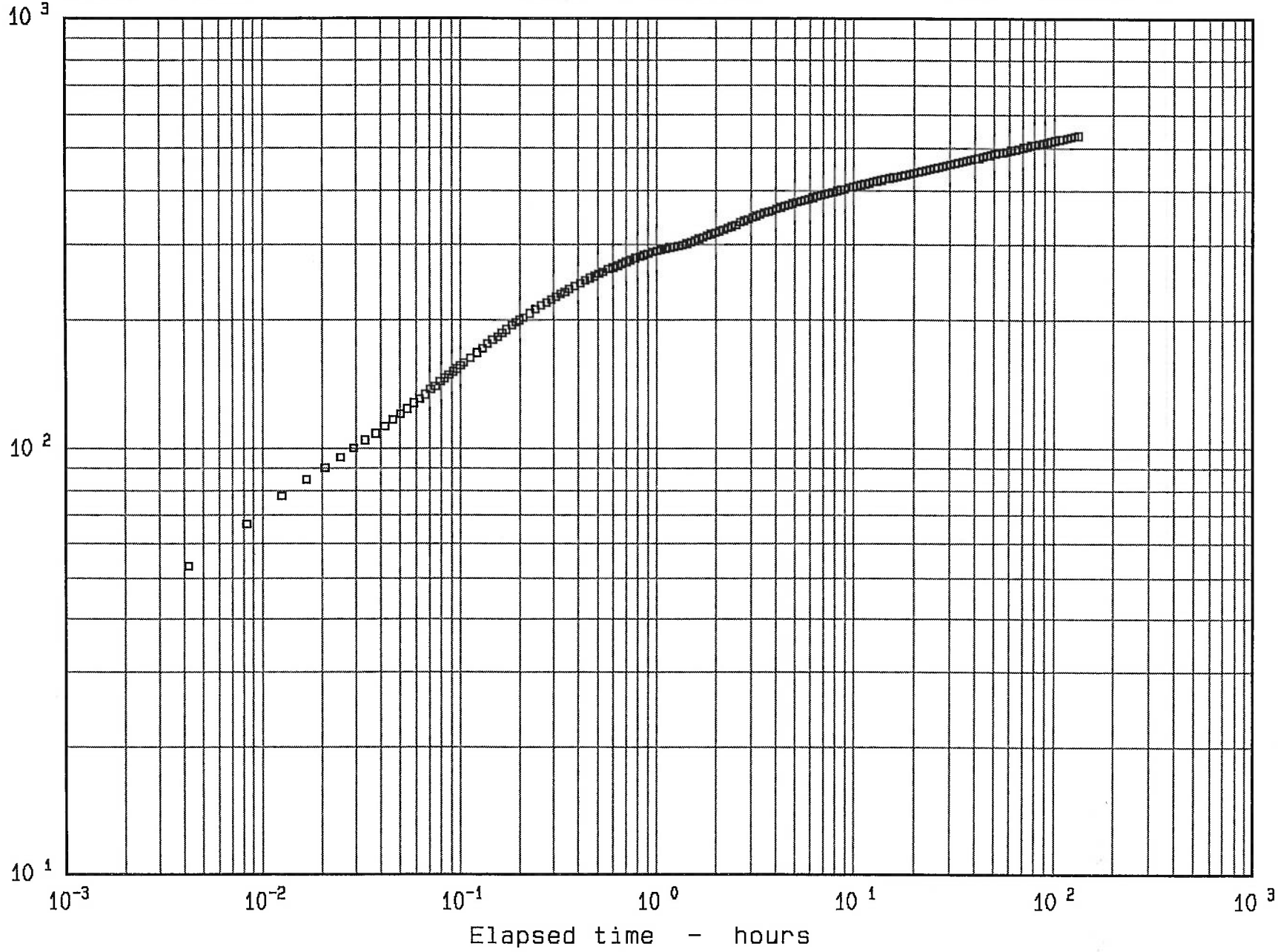


Lightning Wireline, Inc.

Company : WATTENBERG DISPOSAL | Well # : SUCKLA FARMS #1 | Location : SECTION 10-T1N-R8E

Lease : SUCKLA | Field : WATTENBERG | Test date : 10/26/01-11/01/01

County : WELD | State : COLORAOD | File - SUCKLA2



Bottom Hole Pressure Build-up Test

Company : WATTENBERG DISPOSAL

Well Number : SUCKLA FARMS #1 Test date : 10/26/01-11/01/01

Data File : SUCKLA3.BHP

Remarks:

Delta Time (hours)	Pressure (psig)	Pressure (psia)	Delta Pressure (psia)
0.0000	4,207.29	4,207.29	
1.0042	3,917.56	3,917.56	289.73
2.0417	3,886.23	3,886.23	321.06
3.0583	3,860.73	3,860.73	346.56
4.0625	3,843.41	3,843.41	363.88
5.1375	3,830.44	3,830.44	376.85
6.1958	3,821.91	3,821.91	385.38
7.2958	3,813.51	3,813.51	393.78
8.3875	3,806.88	3,806.88	400.41
9.4375	3,801.07	3,801.07	406.22
10.6208	3,795.85	3,795.85	411.44
11.6625	3,792.01	3,792.01	415.28
12.8042	3,787.67	3,787.67	419.62
14.0542	3,783.98	3,783.98	423.31
15.0792	3,780.08	3,780.08	427.21
16.1792	3,777.04	3,777.04	430.25
17.3542	3,774.08	3,774.08	433.21
18.6042	3,770.96	3,770.96	436.33
19.9625	3,767.48	3,767.48	439.81

Cont....

Bottom Hole Pressure Build-up Test

Delta Time (hours)	Pressure (psig)	Pressure (psia)	Delta Pressure (psia)
21.4125	3,764.24	3,764.24	443.05
22.4292	3,761.96	3,761.96	445.33
23.5125	3,759.89	3,759.89	447.40
24.6292	3,757.64	3,757.64	449.65
25.8125	3,755.05	3,755.05	452.24
27.0458	3,752.78	3,752.78	454.51
28.3292	3,750.54	3,750.54	456.75
29.6792	3,748.87	3,748.87	458.42
31.0958	3,746.65	3,746.65	460.64
32.5792	3,743.88	3,743.88	463.41
34.1292	3,741.50	3,741.50	465.79
35.7458	3,739.50	3,739.50	467.79
37.4458	3,736.93	3,736.93	470.36
39.2292	3,734.56	3,734.56	472.73
41.0958	3,732.57	3,732.57	474.72
43.0458	3,730.21	3,730.21	477.08
44.0625	3,728.57	3,728.57	478.72
45.0958	3,727.13	3,727.13	480.16
46.1625	3,726.04	3,726.04	481.25
47.2458	3,724.59	3,724.59	482.70
48.3625	3,724.07	3,724.07	483.22
49.4958	3,721.88	3,721.88	485.41
50.6625	3,721.36	3,721.36	485.93
51.8458	3,720.48	3,720.48	486.81

Cont....

Bottom Hole Pressure Build-up Test

Delta Time (hours)	Pressure (psig)	Pressure (psia)	Delta Pressure (psia)
53.0625	3,718.85	3,718.85	488.44
54.3125	3,717.77	3,717.77	489.52
55.5792	3,717.26	3,717.26	490.03
56.8792	3,715.83	3,715.83	491.46
58.2125	3,714.56	3,714.56	492.73
59.5792	3,713.86	3,713.86	493.43
60.9792	3,712.25	3,712.25	495.04
62.4125	3,711.55	3,711.55	495.74
63.8792	3,710.32	3,710.32	496.97
65.3792	3,707.79	3,707.79	499.50
66.9125	3,707.28	3,707.28	500.01
68.4792	3,705.84	3,705.84	501.45
70.0792	3,704.21	3,704.21	503.08
71.7125	3,703.53	3,703.53	503.76
73.4125	3,702.10	3,702.10	505.19
75.1458	3,701.04	3,701.04	506.25
76.9125	3,699.43	3,699.43	507.86
78.7125	3,698.74	3,698.74	508.55
80.5792	3,697.69	3,697.69	509.60
82.4792	3,696.45	3,696.45	510.84
84.4125	3,695.40	3,695.40	511.89
86.3792	3,694.53	3,694.53	512.76
88.4125	3,693.47	3,693.47	513.82
90.4792	3,691.32	3,691.32	515.97

Cont....

Bottom Hole Pressure Build-up Test

Delta Time (hours)	Pressure (psig)	Pressure (psia)	Delta Pressure (psia)
92.6125	3,690.83	3,690.83	516.46
94.7792	3,689.40	3,689.40	517.89
97.0125	3,688.54	3,688.54	518.75
99.2792	3,687.12	3,687.12	520.17
101.6125	3,685.52	3,685.52	521.77
104.0125	3,684.66	3,684.66	522.63
106.4458	3,683.24	3,683.24	524.05
108.9458	3,682.59	3,682.59	524.70
111.5125	3,680.81	3,680.81	526.48
114.1125	3,679.55	3,679.55	527.74
116.8125	3,678.89	3,678.89	528.40
119.5458	3,677.84	3,677.84	529.45
122.3458	3,676.43	3,676.43	530.86
125.2125	3,675.20	3,675.20	532.09
128.1458	3,673.79	3,673.79	533.50
131.1458	3,672.56	3,672.56	534.73

PETERSON ENERGY MANAGEMENT, INC.

1805 MORNING DRIVE
LOVELAND, CO 80538

(303) 669-7411

August 28, 1993

John A. Carson
Environmental Engineer
Environmental Protection Agency
999 18th Street
Denver, Colorado 80202-2405

Re: EPA Final Permit No. CO1516-02115
Wright's Disposal, Inc.
Suckla Farms Injection Well #1
NE Sec. 10-T1N-R67W, Weld County, Colorado

Dear Mr. Carson:

On the following pages we have detailed and analysed the tests performed on the subject well July 8, 1993, through July 12, 1993. The test design is essentially that outlined by Wright's Disposal, Inc. (WDI) in their June 23, 1993 proposal to your agency. A pressure falloff test was conducted from steady-state injection conditions. This was followed by an annular mechanical integrity test and step-rate injection test. A radioactive tracer and temperature survey from the base of surface casing to total depth concluded the test procedure. Hard copies of the field data have been sent to the EPA by the service companies performing the tests.

Our conclusion, after witnessing the tests in the field and subsequently reviewing the test data, is that the well casing, injection tubing string, tubing/casing injection packer, and cement bond in the near wellbore region are all mechanically competent. The test data shows conclusively that all injected fluids are presently being confined to the Lyons formation in the perforated interval from 9276' to 9418'. There is no indication from any of the test data that any fraction of the injected volume is exiting the wellbore at any point other than the presently perforated interval. We therefore recommend that the Suckla Farms Injection Well #1 be approved for Class I injection service.

The final portion of this report deals with the expected radius of influence of the fluids to be injected into the subject well. It is our conclusion, again after reviewing the available data, that the maximum permitted injection volume for the Suckla Farms #1 could be safely increased above the current 8,301,706 barrels. While this is not a matter of immediate concern to the present investigation, the issue will need to be addressed in the near future.

It has been a pleasure working with you on this project. Please advise us if your agency requires further information.

Respectfully submitted,

Andrew S. Peterson
President

ASP/sd
Attachments

MECHANICAL INTEGRITY TEST

This test was conducted on July 9, 1993. The tubing pressure at the start of the test was 300 psi. The tubing/casing annulus was pressured to 610 psi using a pump truck. Permit stipulations called for a differential of at least 200 psi between tubing and casing pressures. This was exceeded by 110 psi. The pump truck was then isolated from the annulus by a closed valve and the pump line was disconnected. Tubing and annulus pressures were then monitored with a continuous recording strip chart for the specified 45 minute interval, at which time the annulus pressure remained 610 psi. No annular pressure decrease was observed during the test. The shut in tubing pressure had declined to 250 psi at the conclusion of the mechanical integrity test. No communication between tubing and annulus was observed.

A pressure drop on the annulus of ten percent (or 61 psi) would have been permissible during the 45 minute test interval, per EPA guidelines. There was no pressure drop noted on this test, indicating that there are no leaks in the injection system.

This test shows conclusively that the injection tubing string, the well casing, and the packer that seals the annular space between the tubing and casing are all holding pressure and are not leaking. All injected fluids are therefore confined to the injection interval in the Lyons formation.

The mechanical integrity test is scheduled to be repeated at two year intervals following Class I approval.

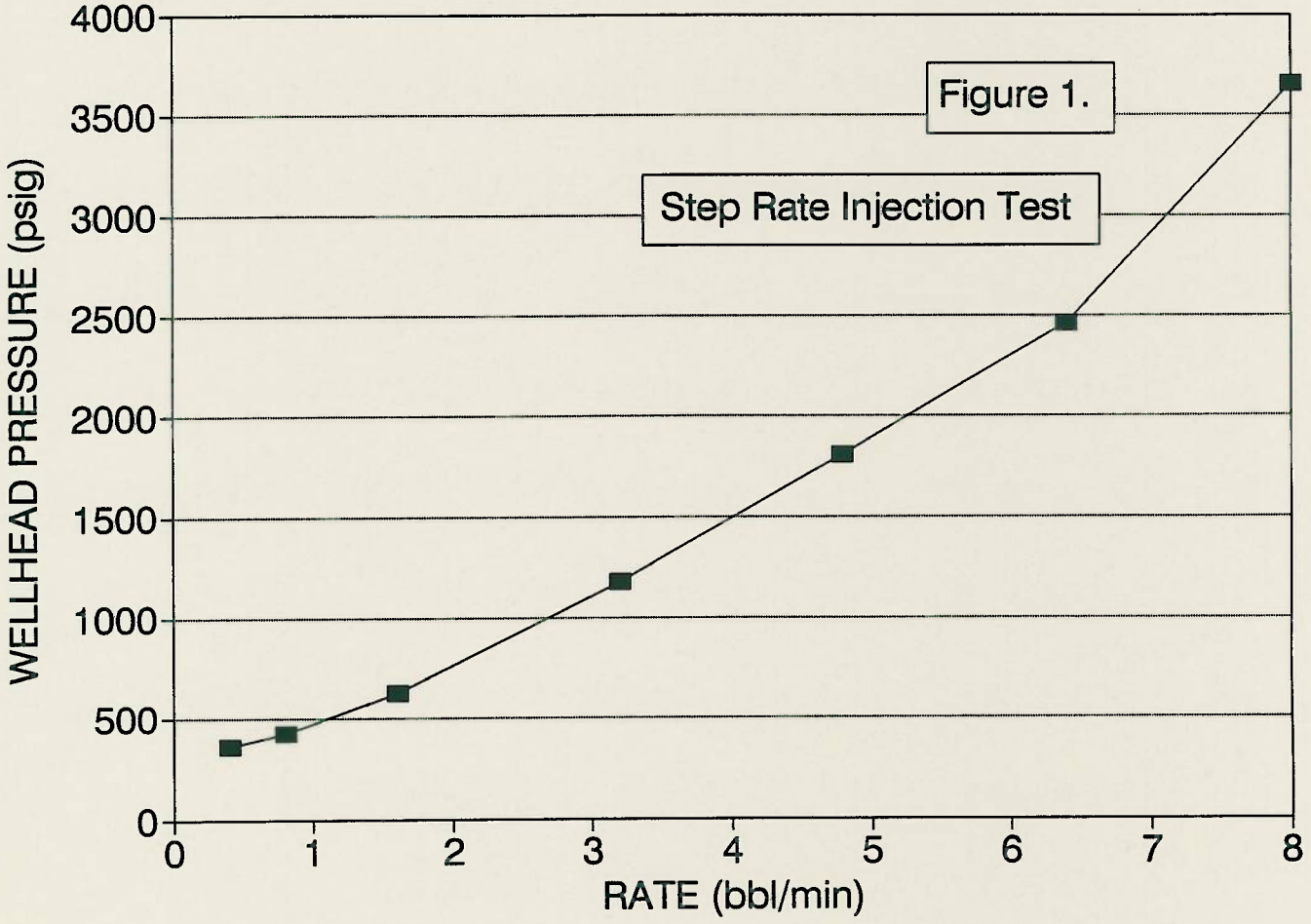
STEP-RATE INJECTION TEST

This test immediately followed the mechanical integrity test on July 9, 1993. The step rate injectivity test was designed to determine the formation breakdown pressure, fracture pressure, and instantaneous shut-in pressure. A maximum injection rate of 8 barrels-per-minute (BPM) was anticipated, and injection rates were chosen to span a range of 5%, 10%, 20%, 40%, 60%, 80%, and 100% of maximum. The test began at 0.4 BPM at 360 psi. No breakdown pressure was observed.

Figure 1. shows the stabilized injection pressures plotted as a function of injection rate. The graph would be expected to show a decrease in slope at injection pressures exceeding the formation fracture pressure, since fracture propagation pressure is normally less than fracture initiation pressure. This test does not show a decrease in slope at any time. To quantify the change in slope, Figure 2. shows the change in slope per BPM, or the first derivative of the injection pressure graph. This graph shows a leveling off as the slope increases at a lesser rate, but the curve never develops a negative slope. This is shown also in Figure 3., the second

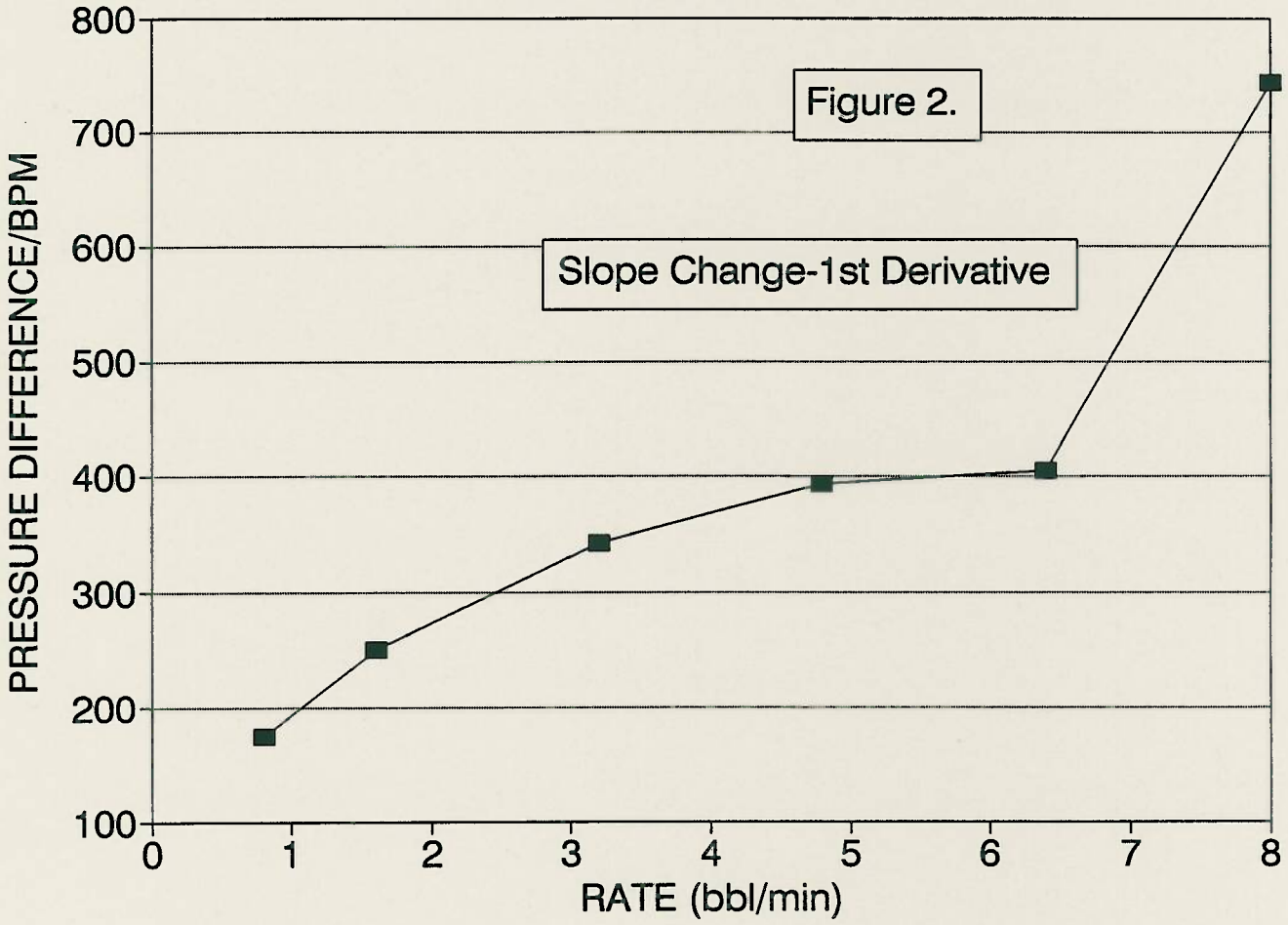
Suckla Farms Injection Well #1

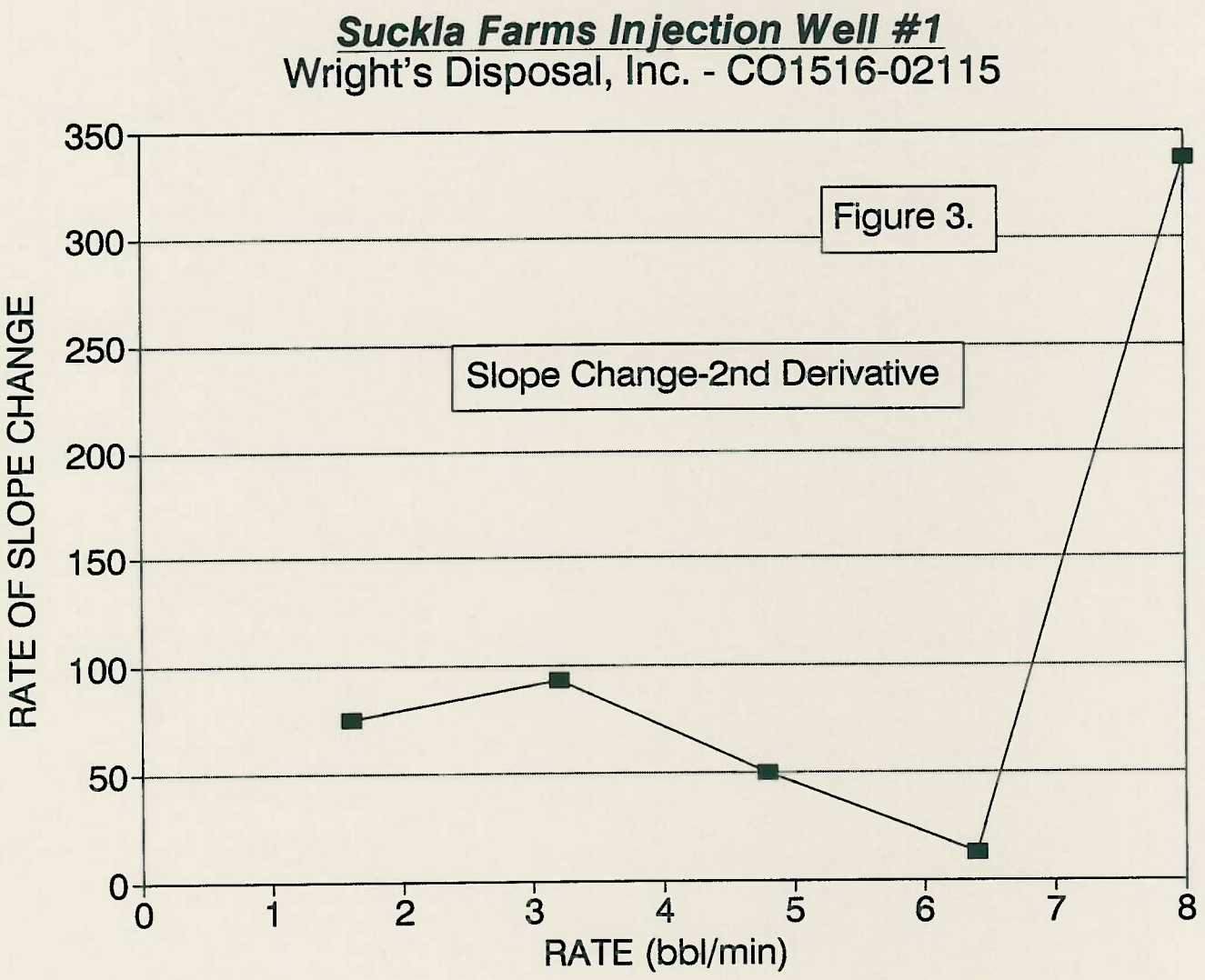
Wright's Disposal, Inc. - CO1516-02115



Suckla Farms Injection Well #1

Wright's Disposal, Inc. - CO1516-02115




Suckla Farms Injection Well #1
Wright's Disposal, Inc. - CO1516-02115
Figure 3.
Slope Change-2nd Derivative
RATE OF SLOPE CHANGE
350
300
250
200
150
100
50
0
0
1
2
3
4
5
6
7
8
RATE (bbl/min)

derivative of Figure 1., otherwise defined as the rate of change of the slope curve. The second derivative never goes below zero. This indicates that formation fracturing pressures were not reached at the rates and pressures achieved on this test. The final point on all graphs, at 8 BPM, is anomalously high. Friction pressures are evidently high enough at this pumping rate that they begin to mask the formation effects. The instantaneous shut-in pressure following the injectivity test was 610 psi.

This test shows conclusively that an injection rate of 6.0 BPM, at a corresponding pressure of 2460 psi, will not cause formation fracturing. The exact value of formation fracturing pressure remains unknown at this time. While it is unlikely that formation fracturing occurred at the final 8 BPM rate, this cannot be proved conclusively due to the friction effects seen. Further refinement of the upper end of the step-rate curve, if deemed necessary at a later date, could be accomplished by incorporating friction reducers in the injection fluid. Until further investigation is warranted, the maximum permitted surface injection pressure should be set at no less than 2460 psi.

RADIOACTIVE TRACER AND TEMPERATURE SURVEY

On July 12, 1993, Oil Well Perforators, Inc., conducted a radioactive tracer and temperature survey. The well had been shut in 42 hours prior to commencement of the test. A static temperature pass was run from surface to 9424' plug-back-total-depth (PBTD). No anomalies were noted in the uphole intervals. The first indication of fluid storage was in the Lyons formation at 9320'. This indicated that no significant volume of injection water had accumulated at any place in the wellbore other than the permitted interval. Following the static temperature pass from surface, a high-definition static temperature pass was run from 9000' to 9424'. Again, no anomalies were noted. At this point one injection pump was turned on at a rate of 1.1 BPM (65 bbl/hr). A slug of water soluble radioactive tracer material was injected from the logging tool in the injection tubing string at 700' from surface. This slug was tracked with a gamma ray detector as it traveled down hole. The position of the slug was recorded on a continuous recording chart. The velocity at each point was calculated and compared to the velocity at the previous point to determine whether any fraction of the injection stream had exited the tubing. The velocities in the tubing string remained constant within experimental error, ranging from 189 ft/min to 204 ft /min. The expected theoretical velocity at 1.1 BPM would be 190 ft/min. Once the slug exited the tubing string at the injection packer, slug velocity in the casing ranged from 45 to 52 ft/min, compared to a theoretical value of 49 ft/min. After all radioactive material from the first slug had been pumped onto the formation, the isotope detectors were repositioned immediately above the injection zone. Another radioactive slug was ejected from the tool and the tool remained stationary for 10 minutes. No trace of radioactive material was detected coming back up the outside of the well casing. This shows conclusively that no upward channelling exists on the exterior of the well casing. The cement bond between the formation face and the casing is competent and shows no evidence of uphole communication.

If such communication had existed, the detectors would have picked up the presence of radioactive material coming back up the outside of the casing string.

Following the radioactive tracer survey, with the well still injecting, a temperature survey was run from surface to PBTD. At this time the well had been on injection three hours. Again, no anomalies were noted. Following a further one hour wait while the well remained on injection, a final injection temperature profile was run, this time from 8300' to PBTD. No anomalies were noted. Total water injected during the survey was 243 bbls.

The temperature and tracer surveys confirmed the results of the mechanical integrity test. All injected fluids are exiting the wellbore in the Lyons formation perforated interval from 9276' to 9418'. None of the testing performed July 8, 1993 to July 12, 1993, shows any evidence that injected fluids are exiting the wellbore at any point other than the permitted injection interval.

A temperature survey will be performed at five year intervals following Class I approval. If deemed necessary, a radioactive tracer survey is to accompany the temperature survey. Should the results of the biennial mechanical integrity test continue to show no anomalies, it is hereby recommended that a radioactive tracer survey not be required.

PRESSURE FALLOFF TEST

The pressure falloff test was conducted July 8, 1993 to July 9, 1993. The well had been on injection all year at a recent average of 914 BWPD. A continuous recording pressure gauge accurate to .01 psi was installed at the surface. A stabilized surface injection pressure of 360.47 psia was recorded. The well was shut in for a 23-hour period at which time a surface shut-in pressure of 273.71 psia was recorded. This corresponds to a static bottom hole pressure of 4371 psia at 9276'.

Table 1. shows a detailed pressure readout (psig). Figure 4. is a plot of the shut-in pressures (psia). The following analysis procedure is employed in this report:

1) Plot log Δp vs log Δt. Identify wellbore storage region.
2) Plot pressure vs log shut in time. Pick correct semi-log straight line portion.
3) Calculate permeability and skin factor.
4) Identify and interpret any anomalies.

Suckla Farms Injection Well #1

Wright's Disposal, Inc. - CO1516-02115

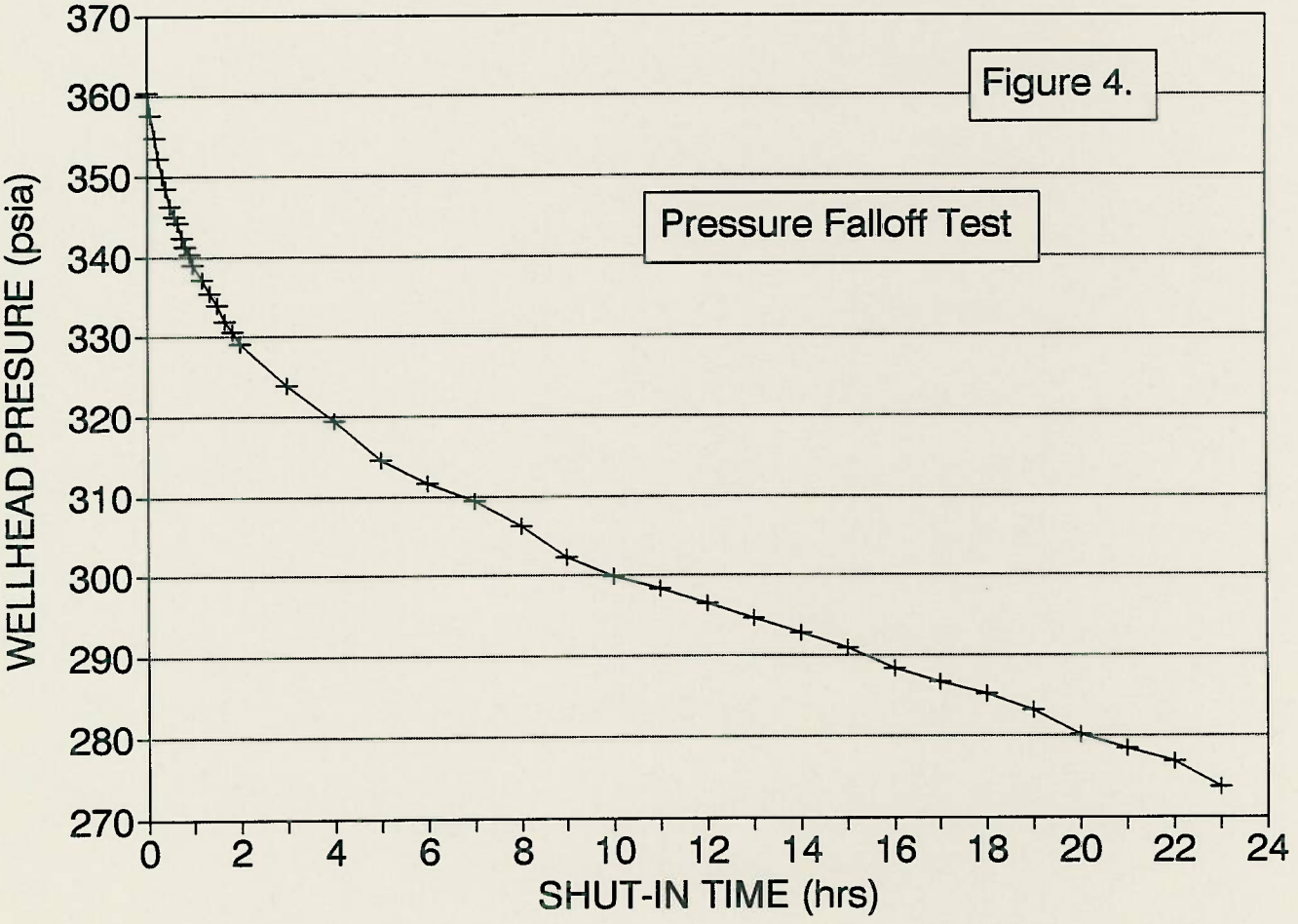


Table 1.

LIGHTNING WIRELINE, INC.

P.O. BOX 1531 • LOVELAND, COLORADO 80539 • 303-222-0922 • FAX 303-669-4077

Well Name: Suckla Farms Injection Well #1
Location: Section 10-t-T1N-R67W, Weld County, Colorado
Operator: Wright's Disposal, Incorporated
Reference: Permit #CO1516-02115

Time(min)	Press
0	348.47
5	345.59
10	342.91
15	340.13
20	337.96
25	336.52
30	334.25
35	333.02
40	332.19
45	330.34
50	329.31
55	328.28
60	327.04
70	325.18
80	323.54
90	321.89
100	319.83
110	318.59
120	317.15

Time(hrs)	Press
3	311.99
4	307.46
5	302.51
6	299.63
7	297.36
8	294.27
9	290.36
10	287.88
11	286.44
12	284.58
13	282.73
14	280.87
15	279.02
16	276.34
17	274.69
18	273.25
19	271.19
20	268.10
21	266.45
22	264.80
23	261.71

Figure 5. shows a plot of log Δp versus log Δt. The unit-slope wellbore storage region ends at 0.3 hours. Figure 6. is a semi-log plot of shut-in pressure versus log Δt, after Miller, Dyes and Hutchinson (1950). The slope of the semi-log straight line immediately following the wellbore storage region is 25 psi/cycle. Figure 7. is a semi-log plot of shut-in pressure versus $\log(T_p + \Delta t/\Delta t)$, after Horner (1951), where T_p is injection time and Δt is shut-in time. The slope of the correct semi-log line on the Horner plot is 26 psi/cycle. This information is used to calculate system permeability and skin factor (damage coefficient) as follows:

Permeability

$$k = \frac{162.6\ q\ u\ b}{m\ h}$$

where:
k = permeability, md
q = injection rate, BPD
u = viscosity, cp
b = volume factor, bbl/bbl
m = slope, psi/cycle
h = height, ft

$$k = \frac{(162.6)(-914)(1)(1)}{(-26)(142)}$$

$$k = 40 \text{ millidarcies}$$

Skin Factor

$$s = 1.15 \left\{ \frac{p_{1hr} - p_0}{m} - \log\frac{k}{\phi\ u\ C_t\ r_w^2} + 3.23 \right\}$$

where:
p_{1hr} = shut in pressure @ 1 hr, psi
p_0 = producing pressure, psi
ϕ = porosity
C_t = total system compressibility, psi/psi
r_w = wellbore radius, ft

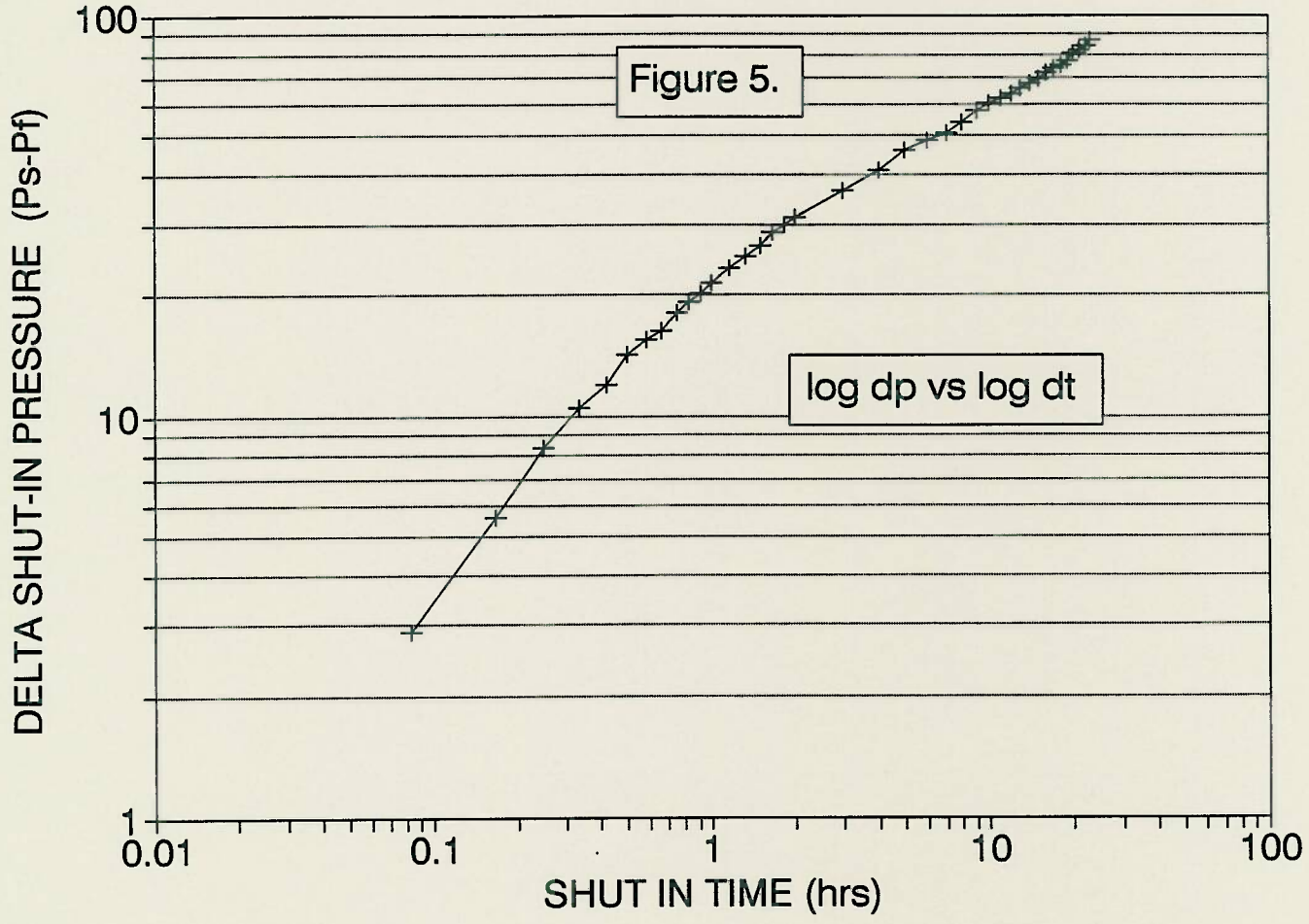
$$s = 1.15 \left\{ \frac{339 - 360}{-26} - \log\frac{40}{(.06)(1)(6\text{x}10^{-6})(.41^2)} + 3.23 \right\}$$

$$s = 1.15 \{ .81 - 8.82 + 3.23 \}$$

$$s = -5.50$$

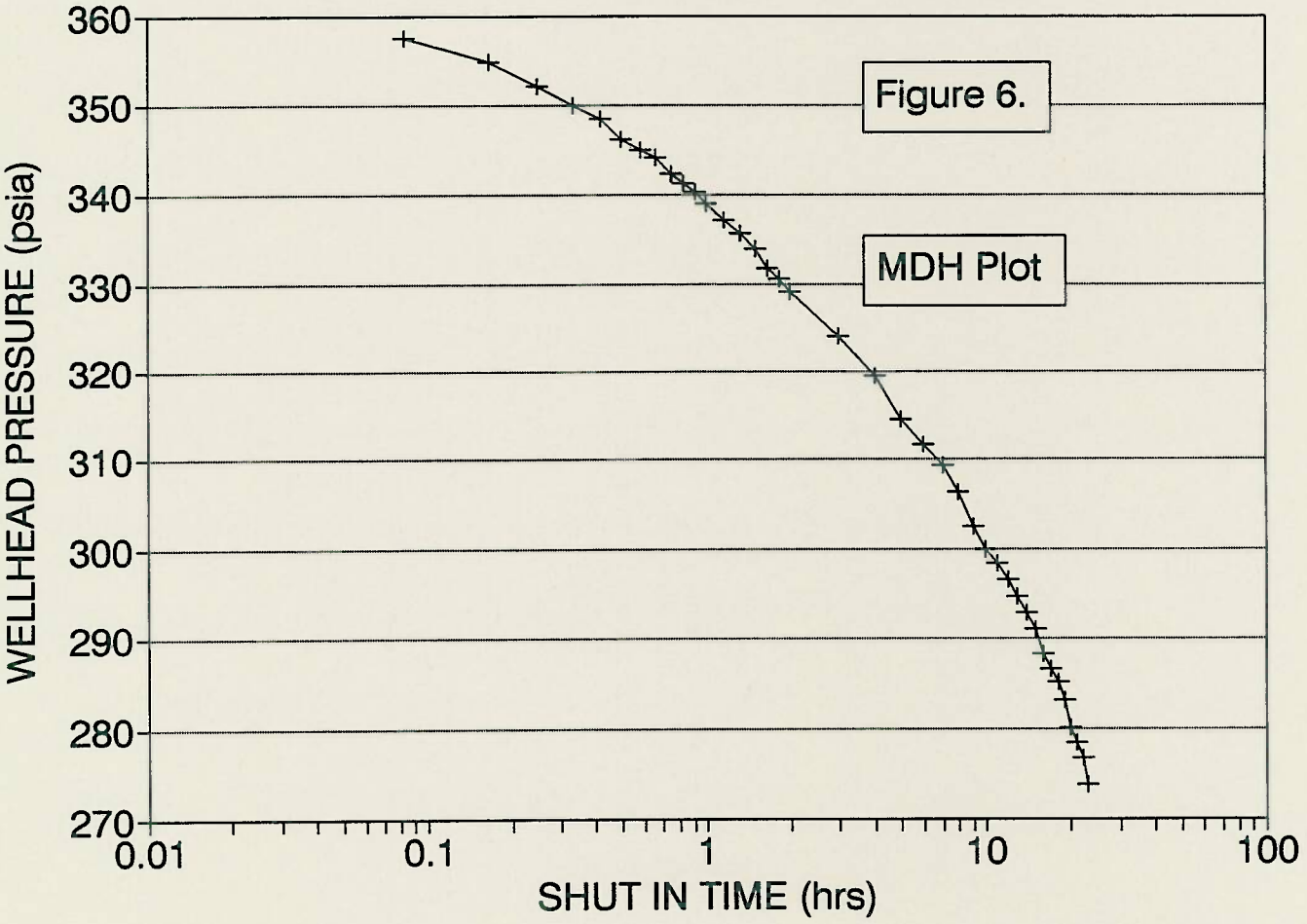
Suckla Farms Injection Well #1

Wright's Disposal, Inc. - CO1516-02115



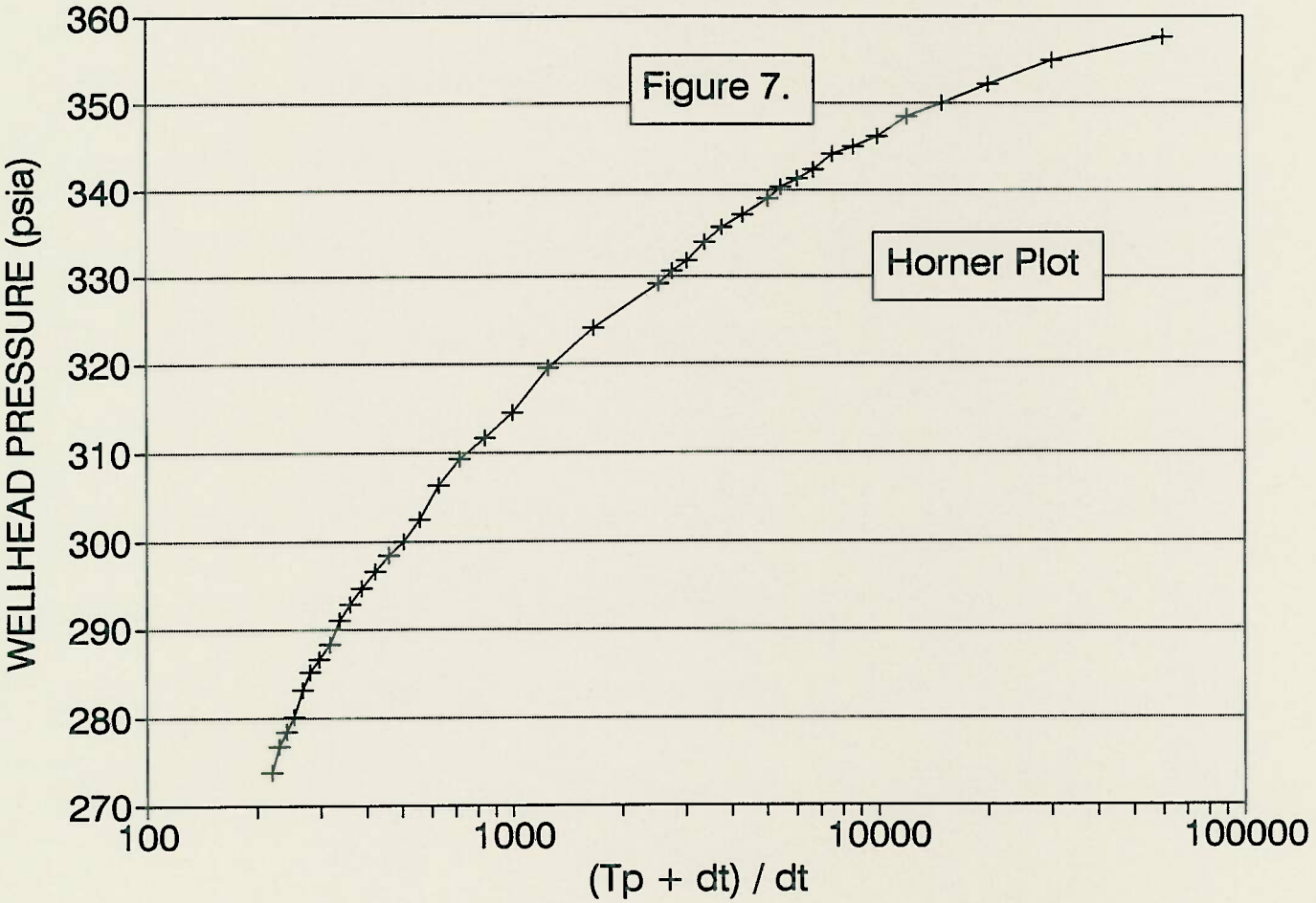
Suckla Farms Injection Well #1

Wright's Disposal, Inc. - CO1516-02115



Suckla Farms Injection Well #1

Wright's Disposal, Inc. - CO1516-02115



This test raises several questions. The semi-log straight line portion of the test lasts only 45 minutes. This could indicate that more than one storage system exists in the Lyons. The falloff test would probably have showed a second semi-log straight line if the test had a longer duration. The reservoir likely contains both matrix and fracture porosity. In support of this, the zone exhibits high injectivity, yet the log porosity is low. The openhole density-neutron log run in this well July 2, 1989, appears to be accurately calibrated, but shows fairly poor repeatability in the Lyons interval. This is an indication of fracture porosity. Approximately 1200 barrels of drilling mud were lost in the Lyons formation during drilling operations. This is also a good indication of fracture porosity. Core samples of the Lyons at other Weld County locations show significant fracturing. In addition, the calculated 40 millidarcy permeability is lower than the well's injectivity would indicate. The negative skin factor also could be an indicator of fracture porosity. Negative skin is normally seen in a stimulated wellbore. Here, the high conductivity fracture porosity may be acting as a stimulated zone upstream, and in series with, the low conductivity matrix porosity.

No radius of investigation was calculated, as Earlougher (SPE, 1977, pg 19) states that systems completely recharged by an aquifer do not lend themselves to conventional radius of investigation calculations. The areal extent and high water flow capacity of the Lyons formation in this area makes it extremely likely that steady-state flow is occurring. This makes the concepts of transient behavior and pseudosteady-state analysis mathmatically tenuous. In light of this, the pressure falloff behavior seen in the latter stages of this test is puzzling, as one would expect to see stabilization, not continued pressure decrease.

The pressure falloff test is scheduled to be repeated annually following Class I approval. Continued refinement of the test parameters is in order.

MAXIMUM PERMITTED INJECTION VOLUME

As stated in the cover letter, the question of the maximum cumulative volume to be injected will need to be addressed in the near future. A volumetric calculation of swept area depends on an accurate value of the total system porosity. As the above analysis indicates, the Lyons porosity system in the Suckla Farms Injection Well #1 is quite complex. The presence of fracture porosity makes an exact determination of total system porosity difficult. Reservoir simulation and more sophisticated pressure transient testing would be required to adequately define this reservoir.

In addition, the one-quarter mile radius specified in the permit may be unnecessarily small. There are no wells penetrating the Lyons formation in the area. The Lyons aquifer has a large areal extent and storage capacity. Confining the injection volume to an arbitrary 1/4 mile radius should be reevaluated in light of the information gained in this round of testing.

peterson energy
management, inc.

November 10, 2001

Mr. Kent Gilbert
V.P. Exploration & Production
Wattenberg Disposal, LLC
1675 Broadway, Suite 2800
Denver, CO 80202

RE: Suckla Farms Injection Well #1
EPA Class I Permit CO1516-02115
Temperature Log Review

Dear Kent:

In this report we detail the results of the temperature logs run by ADI Wireline on October 26th & November 1st, 2001. A base pass was run on October 26th after the well had been shut in for 3 hours. This pass shows differential warming above the perforated interval similar to the temperature log run July 12, 1993, with fluid storage beginning at 9350'. A possible storage anomaly occurs just below the packer at 9000' WLM, but this is more likely an artifact related to transient wellbore effects in the vicinity of the packer. After injecting thirty minutes, a second pass was made while injecting. This pass showed all fluid exiting in the zone, and no anomalies noted above the zone. All perforations appeared to be taking fluid.

After the six day pressure falloff test, a static temperature log was again run, showing a normal static gradient to a fluid storage top at 9215'. No anomaly was noted in the vicinity of the packer, confirming that the response seen on the first pass October 26th was indeed a transient event. Three temperature passes were made after resuming injection. All three passes showed a normal profile, with no anomalies noted, and the entire zone taking fluid. It is possible that the cooling seen starting at 9215' on Run #1 November 1st indicates fluid could be communicating up to this point (61' over the zone), but no higher. However, none of the other passes show any storage above the perforated interval. In addition, the initial static temperature log run July 12, 1993 showed similar storage anomalies above the zone at 9190' and 9235'. These were proved to be artifacts by the subsequent tracer survey.

We were unable to locate a wireline company that still runs radioactive tracer surveys in time for this study. Regulatory difficulties involved in handling RA material have led many companies to quit offering the service.

petroleum engineering

1805 Morning Drive, Loveland, CO 80538 (970) 669-7411 Fax (970) 669-4077

It is our opinion that the temperature logs run October 26th and November 1st show conclusively that all injection fluids are being confined to the 9276'-9418' perforated interval.

We appreciate the opportunity to be of service. Please contact us if we may answer any questions.

Sincerely,

Andrew S. Peterson, PE
President

10/26/01 -
11/1/01

Suckla Farms Injection Well #1

Section 10-T1N-R67W

Weld County, Colorado

EPA Permit No. CO1516-02115

Pressure Falloff Test

October 26 – November 1, 2001

REVIEWED

BY: [signature]

DATE: 11/14/01

Operator:

Wattenberg Disposal, LLC

Report Prepared By:

Peterson Energy Management, Inc.

peterson energy
management, inc.

November 10, 2001

Mr. Kent Gilbert
V.P. Exploration & Production
Wattenberg Disposal, LLC
1675 Broadway, Suite 2800
Denver, CO 80202

RE: Suckla Farms Injection Well #1
EPA Class I Permit CO1516-02115
Pressure Falloff Test Interpretation

Dear Kent:

In this report we detail the results of the pressure falloff test conducted in the subject well October 26th to November 1st, 2001. This is the third falloff test we have analyzed in this well.

Tandem electronic downhole memory gauges were installed at a depth of 9016' with the well injecting at a rate of 1830 BPD. After recording a stabilized bottom hole injection pressure of 4210 psia, the well was shut in for 141.1 hrs (6 days) with pressure gauges in the hole. Recovered data quality was excellent. Bottom hole pressure at the conclusion of the test was 3681 psia.

We have estimated the distance to the injected fluid boundary using the same methodology as in our 1987 report. Injected fluids appear to have traveled 691' from the wellbore. This is an increase of 27' since 1987'. The swept area has increased to 34.5 acres, an increase of 2.7 acres, or 8.5%, since 1987. The EPA Final Permit for this facility specifies a maximum allowable injection radius of 1320'.

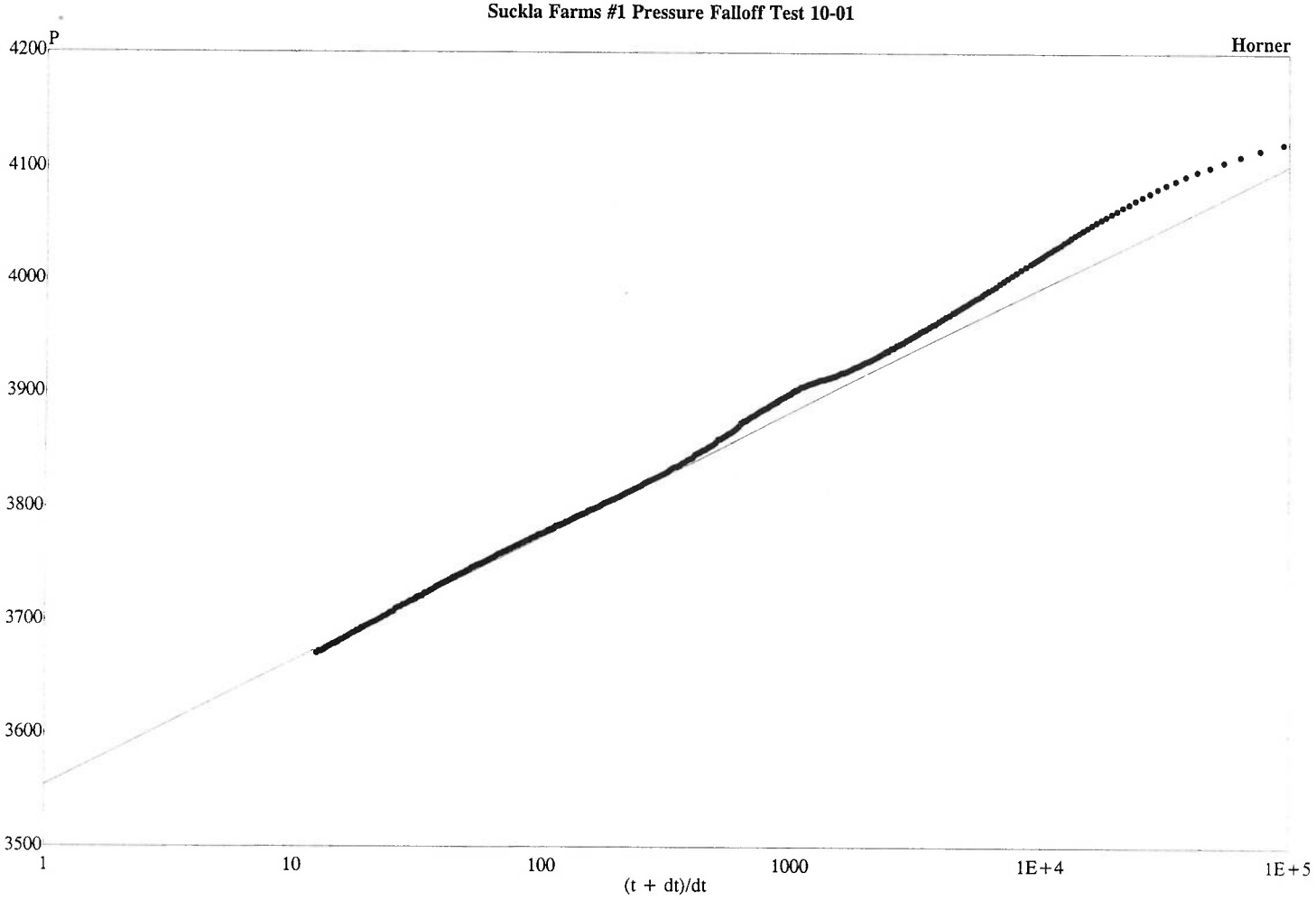
A second slope change is visible on the MDH plot at approximately 15 hours after shut in. This would correspond to an injection front at approximately 400' from the wellbore. This slope change was not seen on the two previous tests, however, data quality was better on this test than on past tests, which may explain why. Future test analysis should be cognizant of the two possible fluid fronts. An injection front at 400' would actually fit better with the calculated volumetric injection front distance of 377' . This is the distance arrived at by assuming the entire thickness of the Lyons injection interval is taking fluid evenly and radially, and assuming the 6% density log porosity is correct.

The six day shut in period was more than adequate for this test. A duration of four days or 100 hours would be adequate on future tests, unless injection volumes increase significantly between tests.

We appreciate the opportunity to be of service. Please contact us if we may answer any questions.

Sincerely,

Andrew S. Peterson, PE
President



Suckla Farms #1 Pressure Falloff Test 10-01

Analysis Results: Horner

Parameters:

Slope = 109.914

m(1 hr) = 3905.95

Prd Time: = 1580 hr

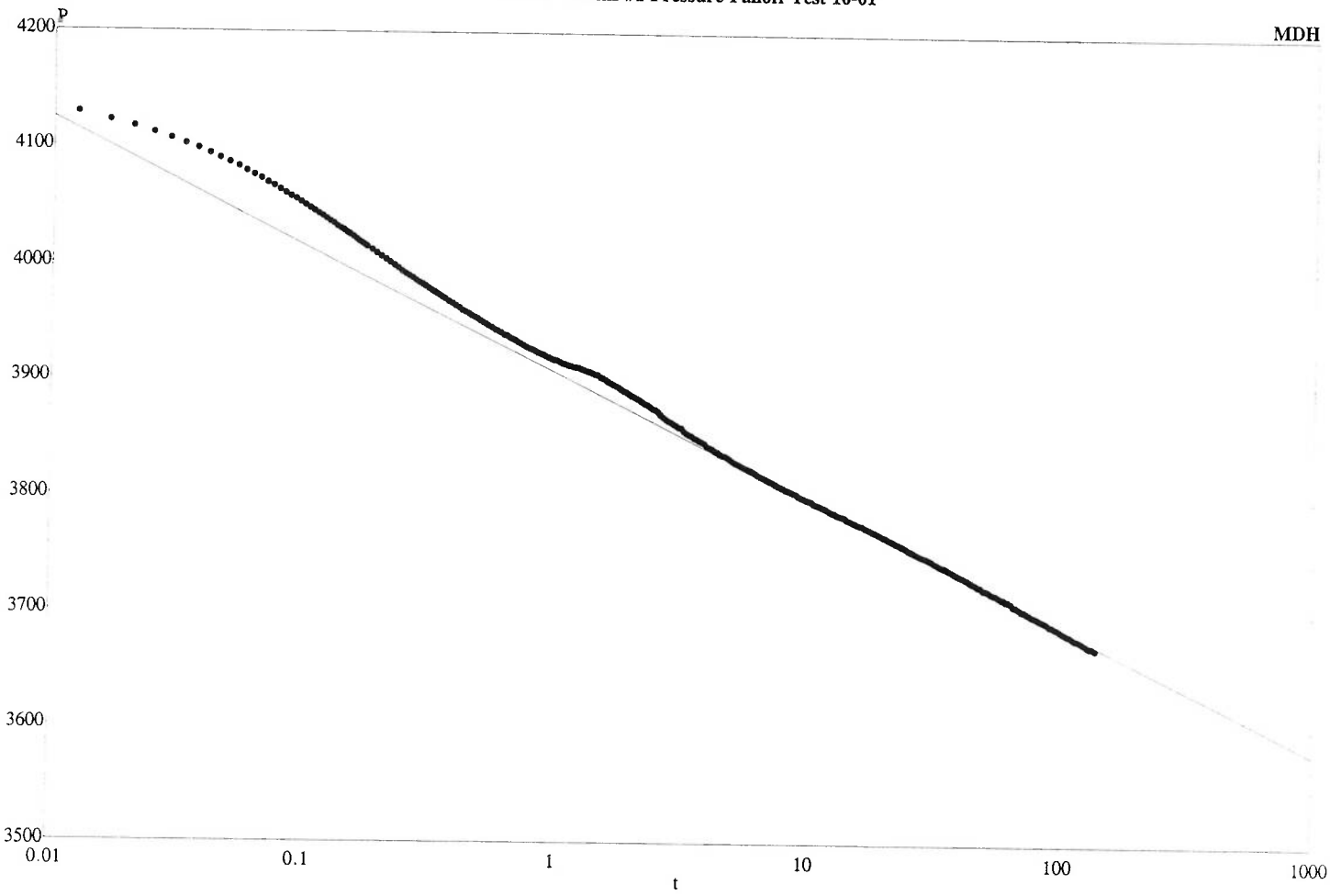
Calculated Values:

kh = 676.66 md-ft

k = 4.76521 md

Skin = -2.9094

P* = 3554.3 psi



Suckla Farms #1 Pressure Falloff Test 10-01

Analysis Results: MDH

Parameters:

Slope = -109.132

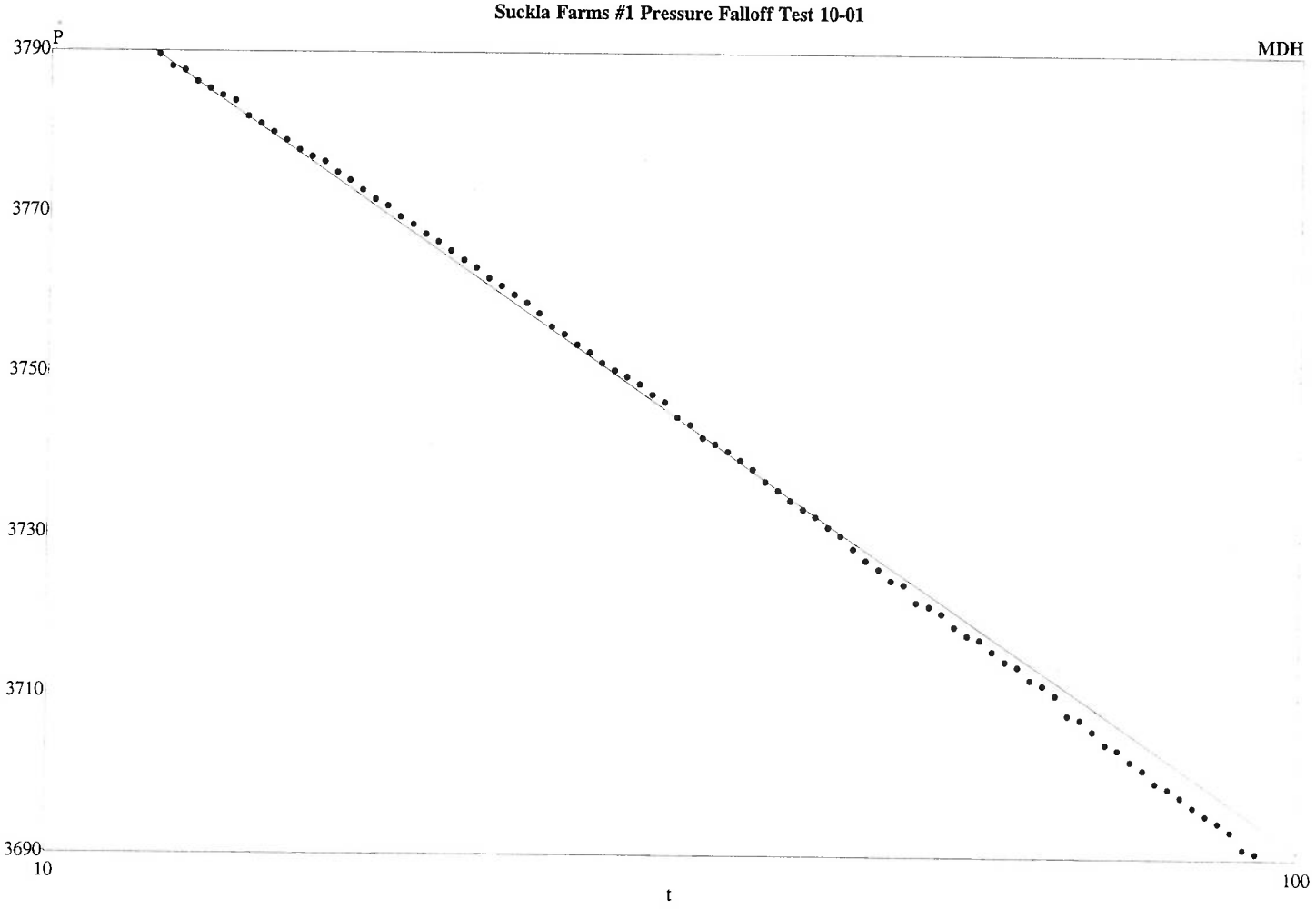
P 1 hr: = 3906.6

Calculated Values:

kh = 681.509 md-ft

k = 4.79936 md

Skin = -2.89754



Suckla Farms #1 Pressure Falloff Test 10-01

Analysis Results: MDH

Parameters:

Slope = -108.127

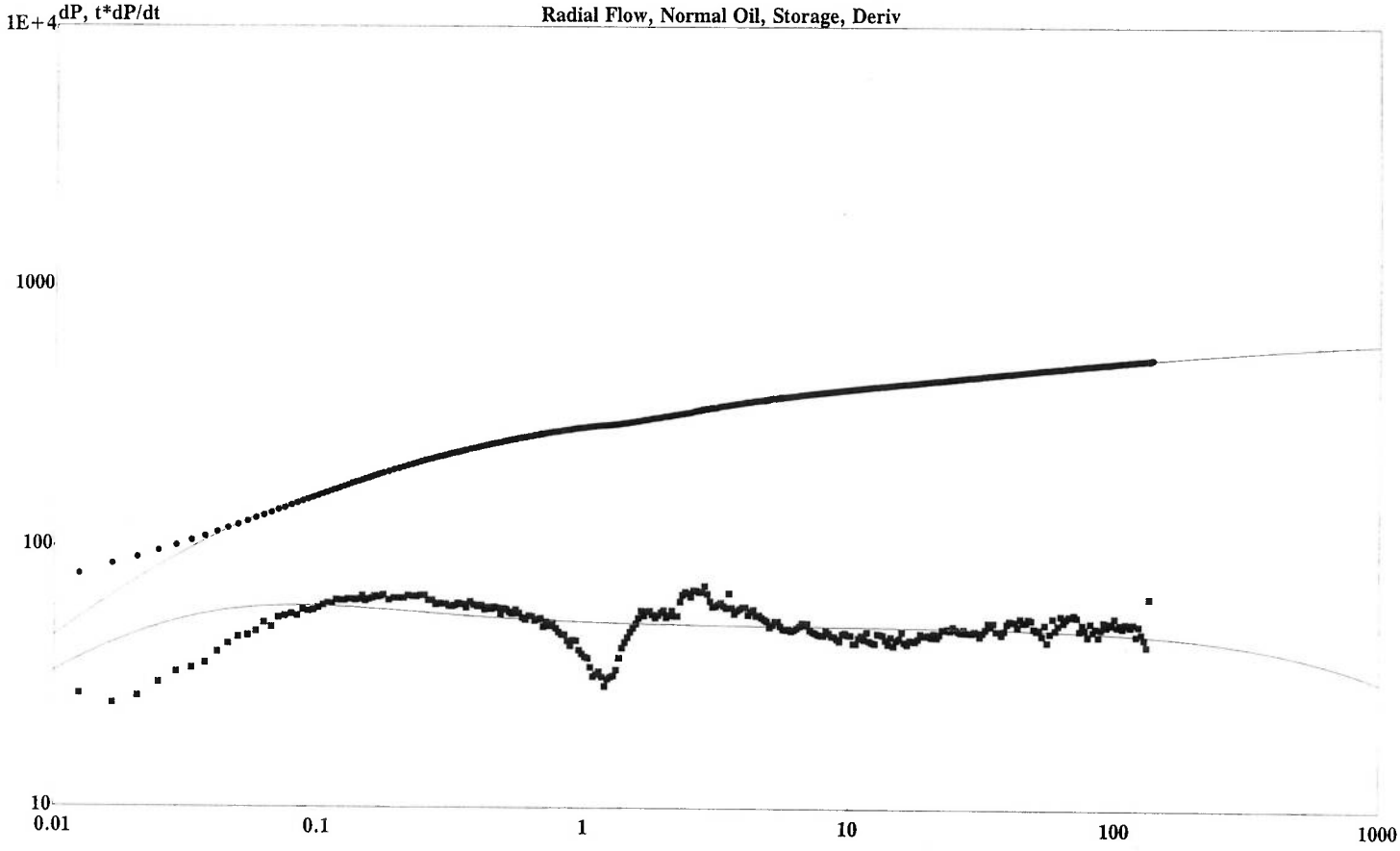
P 1 hr: = 3907.15

Calculated Values:

kh = 122.158 md-ft

k = 0.86027 md

Skin = -1.32122



Suckla Farms #1 Pressure Falloff Test 10-01

Analysis Results: Radial Flow, Normal Oil, Storage, Deriv

Dimensionless Parameters:

tD/CD(1) = 75.379
pD(1) = 0.009885
CaDe2S = 1.7888
CD/CaD = 1

Calculated Values:

Std Dev = 4.2348
k = 4.4972 md
kh = 638.6 md-ft
S = -3.181
CD = 1036

Lightning Wireline, Inc.
P.O. Box 1531
Loveland, Colorado 80539

Tel: (970) 669-8059 Fax: (970) 669-4077

B.H.P. TEST REPORT

Company : WATTENBERG DISPOSAL

Well Number	: SUCKLA FARMS #1	Packr set at	: 9014
Test date	: 10/26/01-11/01/01	Fluid level @	
Lease	: SUCKLA	Perforations	: 9276'-9418'
Field	: WATTENBERG	DW Tbg press	: 0
County	: WELD	DW Csg press	: 0
State	: COLORAOD	Stab flw rate	: -300
Location	: SECTION 10-T1N-R67W	Instrument #	: 21063
Formation	: LYONS	Tested by	: ASP/LG/JMR
Total depth	@ 9448	Calculated by	: ASP
Atmos press.	: 12.3	Gauge set at	: 9005.1
Tubing size	: 2 7/8	B.H. Temp. F	: 242

Test type:

Flowing Pressure Gradient	-	No
Bottom Hole Pressure Build-up Test	-	Yes
Bottom Hole Pressure Draw-Down Test	-	No
Shut-in Pressure Gradient	-	No

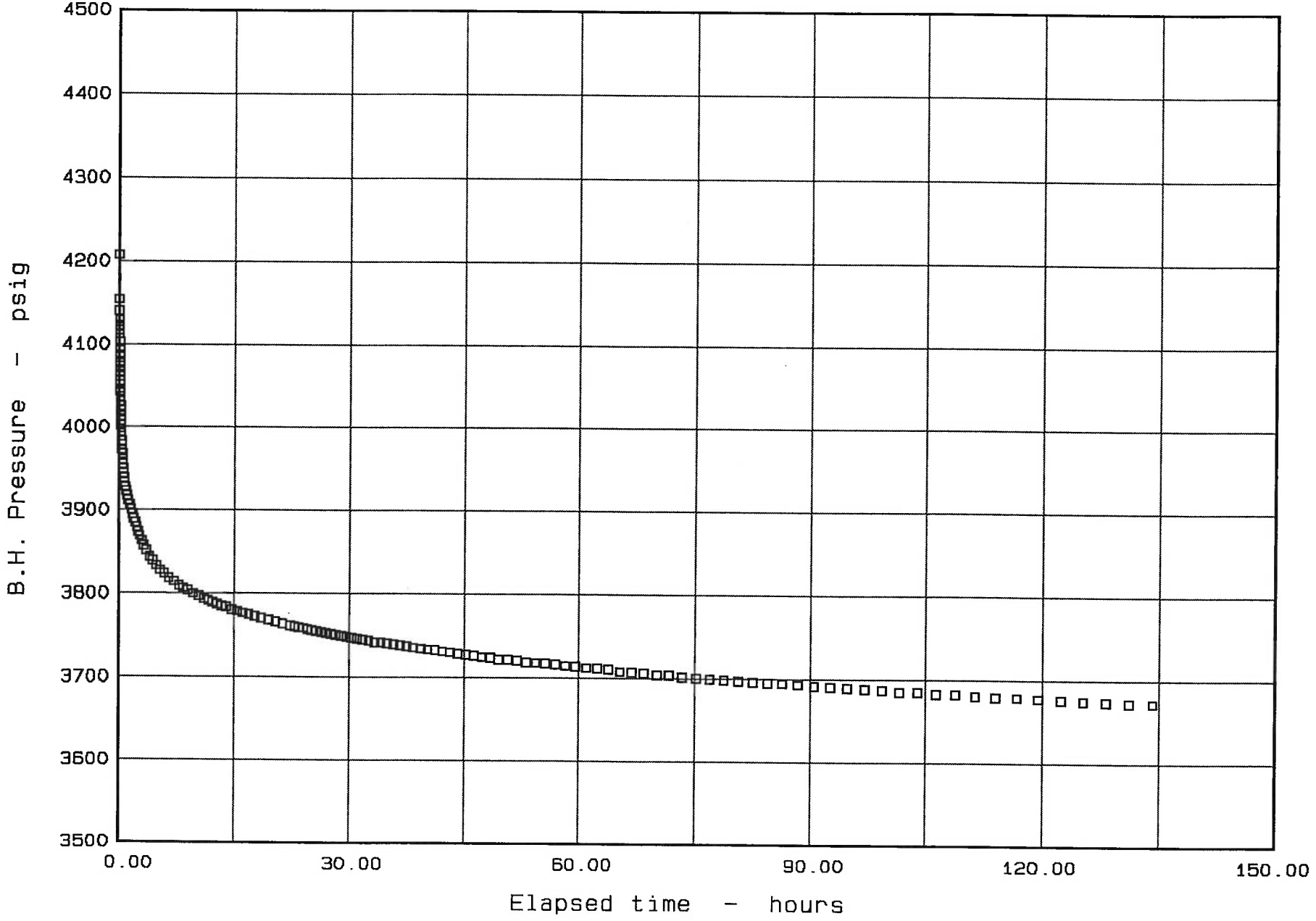
Data File : SUCK

Lightning Wireline, Inc.

Company : WATTENBERG DISPOSAL
Well # : SUCKLA FARMS #1
Location : SECTION 10-T1N-R6E

Lease : SUCKLA
Field : WATTENBERG
Test date : 10/26/01-11/01/01

County : WELD
State : COLORAOD
File - SUCKLA2

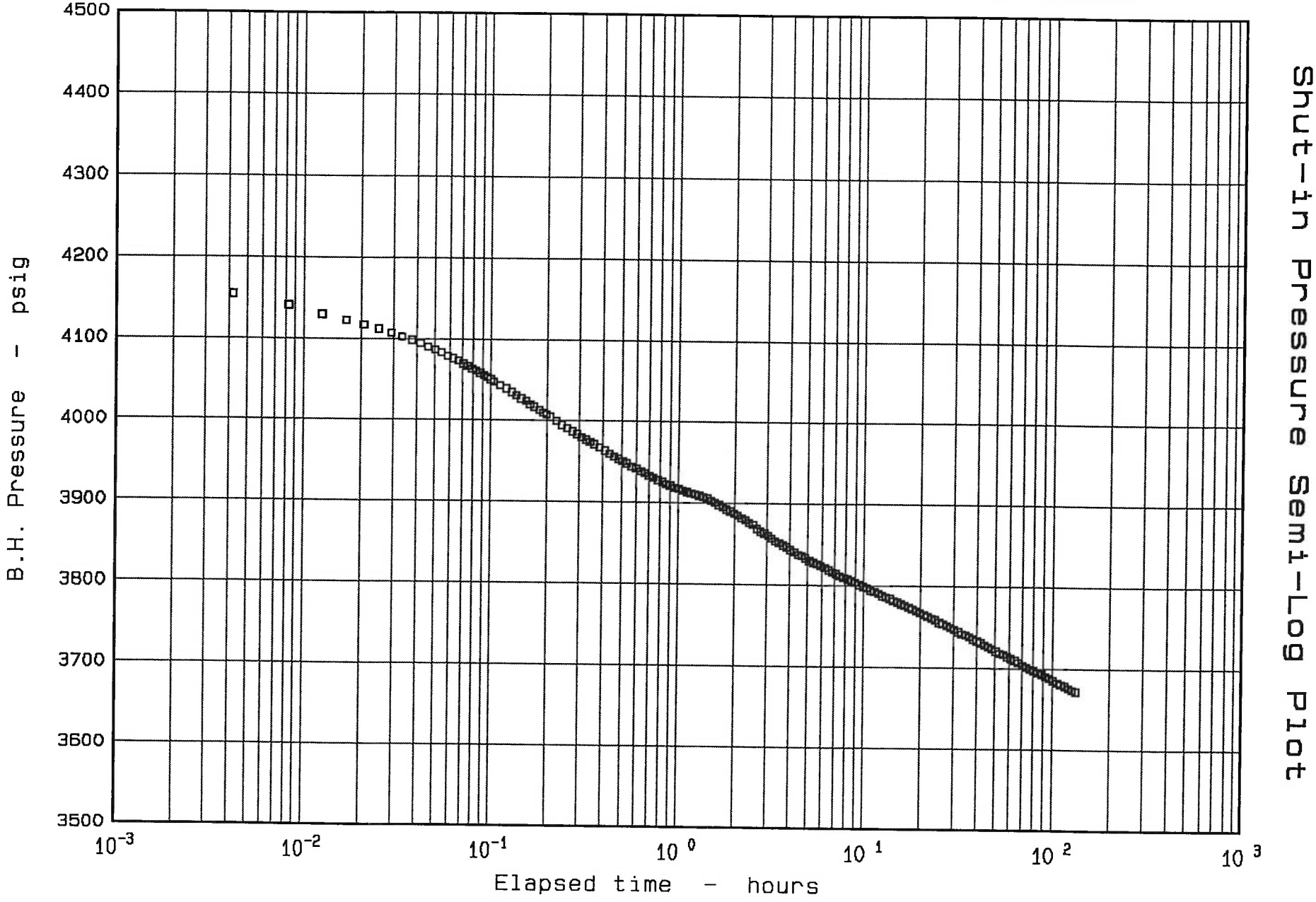


Lightning Wireline, Inc.

Company : WATTENBERG DISPOSAL
Well # : SUCKLA FARMS #1
Location : SECTION 10-T1N-RE

Lease : SUCKLA
Field : WATTENBERG
Test date : 10/26/01-11/01/01

County : WELD
State : COLORAOD
File - SUCKLA2

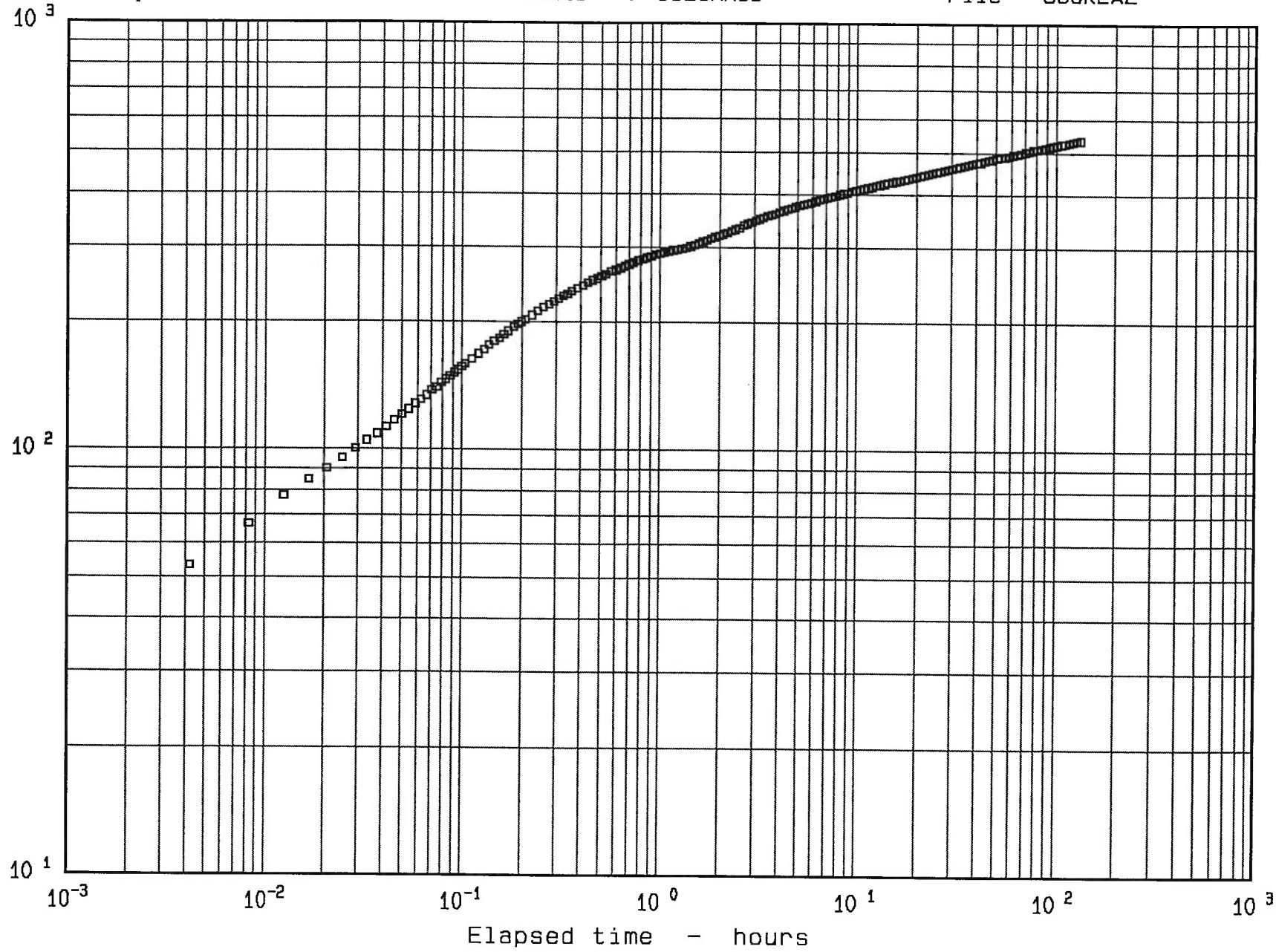


Lightning Wireline, Inc.

Company : WATTENBERG DISPOSAL
Well # : SUCKLA FARMS #1
Location : SECTION 10-T1N-R

Lease : SUCKLA
Field : WATTENBERG
Test date : 10/26/01-11/01/01

County : WELD
State : COLORAOD
File - SUCKLA2



Well Number : SUCKLA FARMS #1 Test date : 10/26/01-11/01/01

Data File : SUCKLA3.BHP

Remarks:

Delta Time (hours)	Pressure (psig)	Pressure (psia)	Delta Pressure (psia)
0.0000	4,207.29	4,207.29	
1.0042	3,917.56	3,917.56	289.73
2.0417	3,886.23	3,886.23	321.06
3.0583	3,860.73	3,860.73	346.56
4.0625	3,843.41	3,843.41	363.88
5.1375	3,830.44	3,830.44	376.85
6.1958	3,821.91	3,821.91	385.38
7.2958	3,813.51	3,813.51	393.78
8.3875	3,806.88	3,806.88	400.41
9.4375	3,801.07	3,801.07	406.22
10.6208	3,795.85	3,795.85	411.44
11.6625	3,792.01	3,792.01	415.28
12.8042	3,787.67	3,787.67	419.62
14.0542	3,783.98	3,783.98	423.31
15.0792	3,780.08	3,780.08	427.21
16.1792	3,777.04	3,777.04	430.25
17.3542	3,774.08	3,774.08	433.21
18.6042	3,770.96	3,770.96	436.33
19.9625	3,767.48	3,767.48	439.81

Cont....

Bottom Hole Pressure Build-up Test

Delta Time (hours)	Pressure (psig)	Pressure (psia)	Delta Pressure (psia)
53.0625	3,718.85	3,718.85	488.44
54.3125	3,717.77	3,717.77	489.52
55.5792	3,717.26	3,717.26	490.03
56.8792	3,715.83	3,715.83	491.46
58.2125	3,714.56	3,714.56	492.73
59.5792	3,713.86	3,713.86	493.43
60.9792	3,712.25	3,712.25	495.04
62.4125	3,711.55	3,711.55	495.74
63.8792	3,710.32	3,710.32	496.97
65.3792	3,707.79	3,707.79	499.50
66.9125	3,707.28	3,707.28	500.01
68.4792	3,705.84	3,705.84	501.45
70.0792	3,704.21	3,704.21	503.08
71.7125	3,703.53	3,703.53	503.76
73.4125	3,702.10	3,702.10	505.19
75.1458	3,701.04	3,701.04	506.25
76.9125	3,699.43	3,699.43	507.86
78.7125	3,698.74	3,698.74	508.55
80.5792	3,697.69	3,697.69	509.60
82.4792	3,696.45	3,696.45	510.84
84.4125	3,695.40	3,695.40	511.89
86.3792	3,694.53	3,694.53	512.76
88.4125	3,693.47	3,693.47	513.82
90.4792	3,691.32	3,691.32	515.97

Cont....

Bottom Hole Pressure Build-up Test

Delta Time (hours)	Pressure (psig)	Pressure (psia)	Delta Pressure (psia)
92.6125	3,690.83	3,690.83	516.46
94.7792	3,689.40	3,689.40	517.89
97.0125	3,688.54	3,688.54	518.75
99.2792	3,687.12	3,687.12	520.17
101.6125	3,685.52	3,685.52	521.77
104.0125	3,684.66	3,684.66	522.63
106.4458	3,683.24	3,683.24	524.05
108.9458	3,682.59	3,682.59	524.70
111.5125	3,680.81	3,680.81	526.48
114.1125	3,679.55	3,679.55	527.74
116.8125	3,678.89	3,678.89	528.40
119.5458	3,677.84	3,677.84	529.45
122.3458	3,676.43	3,676.43	530.86
125.2125	3,675.20	3,675.20	532.09
128.1458	3,673.79	3,673.79	533.50
131.1458	3,672.56	3,672.56	534.73

Form Approved. OMB No. 2000-0042. Approval expires 9-30-86

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

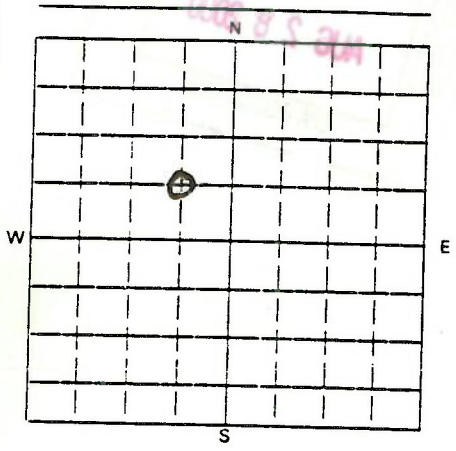
EPA FEB 3 - 19..

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE
WATTENBERG DISPOSAL, LLC.
C/O KP KAUFFMAN CO, 1675 BROADWAY, #2800
DENVER, CO. 80202

NAME AND ADDRESS OF CONTRACTOR
KAUFFMAN WELL SERVICE
10137 WCR 19, FT. LUPTON, CO 80621
303/833-3251

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
CO	WELD	CO1516-02115

SURFACE LOCATION DESCRIPTION
SE ¼ OF NW ¼ OF ¼ SECTION 10 TOWNSHIP 1N RANGE 67W

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 500 ft. from (N/S) S Line of quarter section
and 2020 ft. from (E/W) W Line of quarter section

RECEIVED
AUG 28 2000
EPA Region VIII

WELL ACTIVITY
- [x] Brine Disposal
- [ ] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [ ] Area
Number of Wells VII

Lease Name: SUCKLA FARMS INJECTION WELL #1

Total Depth Before Rework: 9571'
Total Depth After Rework: 9571'
Date Rework Commenced: 7-27-00
Date Rework Completed: 8-23-00

Well Number: #1

WELL CASING RECORD — BEFORE REWORK

Casing Size	Casing Depth	Cement Sacks	Cement Type	Perforations From	Perforations To	Acid or Fracture Treatment Record
8 5/8" 24#	759'	200	"G"			
5 1/2" 20#	9557'	255	"G"	9276'	9418'	1000 GAL 7½% HCL

WELL CASING RECORD — AFTER REWORK (Indicate Additions and Changes Only)

Casing Size	Casing Depth	Cement Sacks	Cement Type	Perforations From	Perforations To	Acid or Fracture Treatment Record
				9276'	9418'	2000 GAL 15% FE ACID

DESCRIBE REWORK OPERATIONS IN DETAIL
USE ADDITIONAL SHEETS IF NECESSARY

CUT OFF TUBING, FISH & RECOVER PKR, LAY DOWN BAD TUBING, RUN NEW TUBING, ACIDIZE WITH 2000 GAL FE (15%) ACID, CIRC. PKR FLUID, SET NEW PKR, TEST ANNULUS 8-23-00, HELD OK.

WIRE LINE LOGS. LIST EACH TYPE

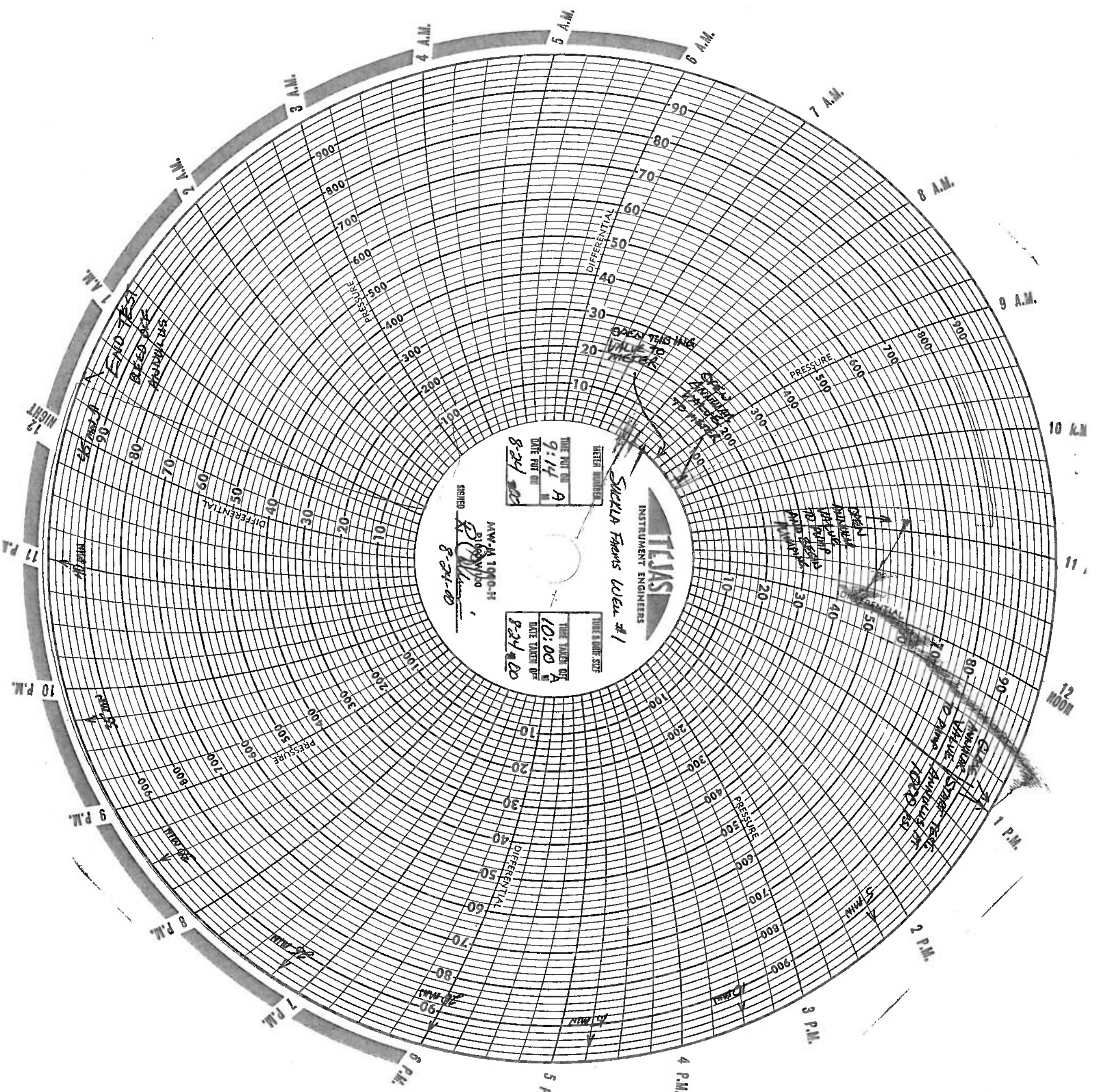
Log Types	Logged Intervals

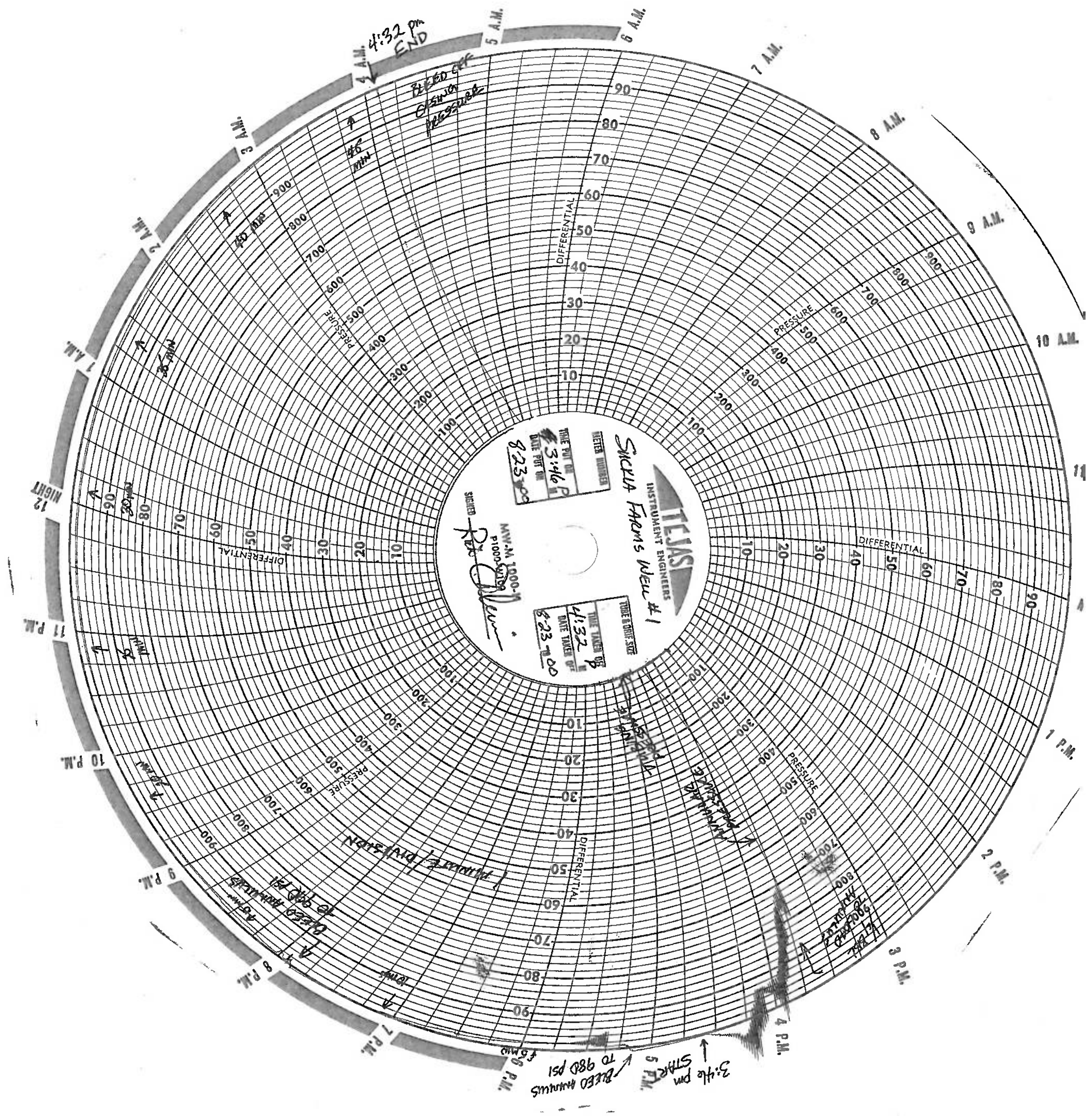
CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
RICK OHLEMEIER COMPLETION SUP., KP KAUFFMAN CO.	Rick Ohlemeier	8-23-00

EPA Form 7520-12 (2-84)


TEJAS
INSTRUMENT ENGINEERS
Sucka Farms Well #1
METER NUMBER
TIME PUT ON 9:14 A M
DATE PUT ON 8-24 00
TUBE & ORIF. SIZE
TIME TAKEN OFF 10:00 A M
DATE TAKEN OFF 8-24 00
MW-M 1000-H
SIGNED
8-24-00
OPEN TUBING VALVE TO METER
END TEST
12 NIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.
6 A.M.
7 A.M.
8 A.M.
9 A.M.
10 A.M.
12 NOON
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.
PRESSURE
DIFFERENTIAL


TEJAS
INSTRUMENT ENGINEERS
Sickla Farms Well #1
METER NUMBER
TIME PUT ON 3:46 P
DATE PUT ON 8-23
TIME TAKEN OFF 4:32 P
DATE TAKEN OFF 8-23
TUBE & ORIF. SIZE
SIGNED
MW-M 1000-M
P1000-SW100
DIFFERENTIAL
PRESSURE
4:32 pm END
3:46 pm START
BLEED OFF CASING PRESSURE
BLEED ANNULUS TO 980 PSI
1 MINUTE / DIVISION
12 NIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.
6 A.M.
7 A.M.
8 A.M.
9 A.M.
10 A.M.
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.

Mechanical Integrity Test
Casing or Annulus Pressure Mechanical Integrity Test

U.S. Environmental Protection Agency
Underground Injection Control Program
999 18th Street, Suite 500 Denver, CO 80202-2466

RECEIVED
AUG 28 2000
EPA REGION VIII

EPA Witness: _____ Date: 8/23/00, 8-24-00
Test conducted by: RICK OHLEMEIER, COMPLETION SUP., KP KAUFFMAN CO, INC.
Others present: ARLON FISHER, DAVE SCHREINER

Well Name: SUCKLA FARMS WELL #1 Type: ER (SWD) Status: AC TA UC
Field: SPINDLE
Location: SENW Sec: 10 T 1 (N)/S R 67 E/(W) County: WELD State: CO
Operator: WATTENBERG DISPOSAL, LLC, DENVER CO.
Last MIT: 8/17/00 Maximum Allowable Pressure: 3700 PSIG

Is this a regularly scheduled test? [ ] Yes [X] No
Initial test for permit? [ ] Yes [X] No
Test after well rework? [X] Yes [ ] No
Well injecting during test? [ ] Yes [X] No If Yes, rate: _____ bpd

Pre-test casing/tubing annulus pressure: TEST #1: 0/0 psig TEST #2: 0/830

MIT DATA TABLE	Test #1 8-23-00	Test #2 8-24-00	Test #3
TUBING	*PRESSURE*		
Initial Pressure	0 psig	0 psig	psig
End of test pressure	0 psig	0 psig	psig
CASING / TUBING	*ANNULUS*	*PRESSURE*	
0 minutes	1000 psig	1000 psig	psig
5 minutes	980 psig	1000 psig	psig
10 minutes	995 psig	1000 psig	psig
15 minutes	990 psig	1000 psig	psig
20 minutes	980 psig	1000 psig	psig
25 minutes	980+ psig	1000 psig	psig
30 minutes	980+ psig	1005 psig	psig
40 minutes	990+ psig	1010 psig	psig
45 minutes	1000 psig	1010 psig	psig
RESULT	[X] Pass [ ] Fail	[X] Pass [ ] Fail	[ ] Pass [ ] Fail

Does the annulus pressure build back up after the test? TEST #1 [X] Yes TEST #2 [X] No TEST #1 DUE TO HEAT EXPANSION.

MECHANICAL INTEGRITY PRESSURE TEST

Additional comments for mechanical integrity pressure test, such as volume of fluid added to annulus and bled back at end of test, reason for failing test (casing head leak, tubing leak, other), etc.:
1/4 BBL ADDED, 1/4 BBL RETURNED, HEAT EXPANSION CAUSED PRESSURE BUILDUP DURING TEST. #1
Signature of Witness: R. Ohlemeier 8-23-00
TEST #2: 1/4 BBL ADDED, 1/4 BBL RETURNED. NO ANNULAR BUILD UP AFTER TEST. R. Ohlemeier 8-24-00

Mechanical Integrity Test
Casing or Annulus Pressure Mechanical Integrity Test

U.S. Environmental Protection Agency
Underground Injection Control Program
999 18th Street, Suite 500 Denver, CO 80202-2466

EPA Witness: _____ Date: 2 / 1 / 01
Test conducted by: Rick Ohlemeier K.P. Kauffman Co.
Others present: Cindi Etcheverry, Weld County Health; Mike Carter, KP Kauffman Co.

Well Name: Suckla Farms Inj. well #1 Type: ER (SWD) Status: AC TA UC
Field: Spindle
Location: SE NW Sec: 10 T 1 (N)/S R 67 E/(W) County: Weld State: Co.
Operator: Wattenberg Disposal, LLC, Denver, Co.
Last MIT: 8 / 24 / 00 Maximum Allowable Pressure: 3700 PSIG

Is this a regularly scheduled test? [ ] Yes [X] No
Initial test for permit? [ ] Yes [X] No
Test after well rework? [X] Yes [ ] No
Well injecting during test? [ ] Yes [X] No If Yes, rate: _____ bpd

Pre-test casing/tubing annulus pressure: 0/0 psig

MIT DATA TABLE	Test #1	Test #2	Test #3
TUBING	*PRESSURE*		
Initial Pressure	0 psig	psig	psig
End of test pressure	0 psig	psig	psig
CASING / TUBING	*ANNULUS*	*PRESSURE*	
0 minutes	1075 psig	psig	psig
5 minutes	1075 psig	psig	psig
10 minutes	1075 psig	psig	psig
15 minutes	1070 psig	psig	psig
20 minutes	1070 psig	psig	psig
25 minutes	1070 psig	psig	psig
30 minutes	1070 psig	psig	psig
_____ minutes	psig	psig	psig
_____ minutes	psig	psig	psig
RESULT	[X] Pass [ ] Fail	[ ] Pass [ ] Fail	[ ] Pass [ ] Fail

Does the annulus pressure build back up after the test ? [ ] Yes [X] No

MECHANICAL INTEGRITY PRESSURE TEST

Additional comments for mechanical integrity pressure test, such as volume of fluid added to annulus and bled back at end of test, reason for failing test (casing head leak, tubing leak, other), etc.:
One BBL Fluid pumped in, one BBL fluid recovered

Signature of Witness: R. Ohlemeier

Mechanical Integrity Test
Casing or Annulus Pressure Mechanical Integrity Test

U.S. Environmental Protection Agency
Underground Injection Control Program
999 18th Street, Suite 500 Denver, CO 80202-2466

EPA Witness: _____ Date: 2 / 1 / 01
Test conducted by: RICK OHLEMEIER, K.P. KAUFFMAN CO.
Others present: CINDI ETCHEVERRY, WELD COUNTY HEALTH; MIKE CARTER, KP KAUFFMAN, CO.

Well Name: SUCKLA FARMS INJ. WELL #1 Type: ER (SWD) Status: AC TA UC
Field: SPINDLE
Location: SE NW Sec: 10 T 1 (N)/ S R 67 E /(W) County: WELD State: CO.
Operator: WATTENBERG DISPOSAL, LLC, DENVER, CO.
Last MIT: 8 / 24 / 00 Maximum Allowable Pressure: 3700 PSIG

Is this a regularly scheduled test? [ ] Yes [X] No
Initial test for permit? [ ] Yes [X] No
Test after well rework? [X] Yes [ ] No
Well injecting during test? [ ] Yes [X] No If Yes, rate: _____ bpd

Pre-test casing/tubing annulus pressure: 0/0 psig

MIT DATA TABLE	Test #1	Test #2	Test #3
TUBING	*PRESSURE*		
Initial Pressure	0 psig	psig	psig
End of test pressure	0 psig	psig	psig
CASING / TUBING	*ANNULUS*	*PRESSURE*	
0 minutes	1075 psig	psig	psig
5 minutes	1075 psig	psig	psig
10 minutes	1075 psig	psig	psig
15 minutes	1070 psig	psig	psig
20 minutes	1070 psig	psig	psig
25 minutes	1070 psig	psig	psig
30 minutes	1070 psig	psig	psig
_____ minutes	psig	psig	psig
_____ minutes	psig	psig	psig
RESULT	[X] Pass [ ] Fail	[ ] Pass [ ] Fail	[ ] Pass [ ] Fail

Does the annulus pressure build back up after the test ? [ ] Yes [X] No

MECHANICAL INTEGRITY PRESSURE TEST

Additional comments for mechanical integrity pressure test, such as volume of fluid added to annulus and bled back at end of test, reason for failing test (casing head leak, tubing leak, other), etc.:
ONE BBL FLUID PUMPED IN, ONE BBL FLUID RECOVERED

Signature of Witness: R. Ohlemeier

KPK
K.P. Kauffman Co., Inc.
Daily Workover or Completion Report

SUPERVISOR: Rick Ohlemeier Road Dir: 19 at 10.5, 3/10E, N into

Well:	Suckla Farms Injection Well #1	WELL DOWN:	n/a
L. Desc:	SENW 10-1N-67W	County: Weld, CO	ROL DATES: 01/26/2001
Formation:	Lyons	Perfs: 9276-9418, 194 holes	
Casing:	5.5 20# N-80	TD: 9571 PBTD: 9476	KB Meas: 10

Contractor: KWS RIG 3

Well Problem: Replace tubing with fiberline tubing.

Operation:

01/26/2001 MIRU. No further ops.

01/29/2001 Release packer. POOH and lay down unlined 2-7/8" tubing. Stand back 110 jts. fiberline tubing. No further ops.

Tbg psi:
Csg psi:

01/30/2001 RIH with packer and tubing. Reverse circulate 60 bw treated with Anhib II.

01/31/2001 Continue reverse circulating 70 additional bbl treated water. Set packer. Pressure test annulus to 1000 psi for 15 min. Tested good. Bleed off pressure. SWI for temperature stabilization.

02/01/2001 Conduct and record MIT for EPA approval. Field test passed. Waiting on approval from EPA.

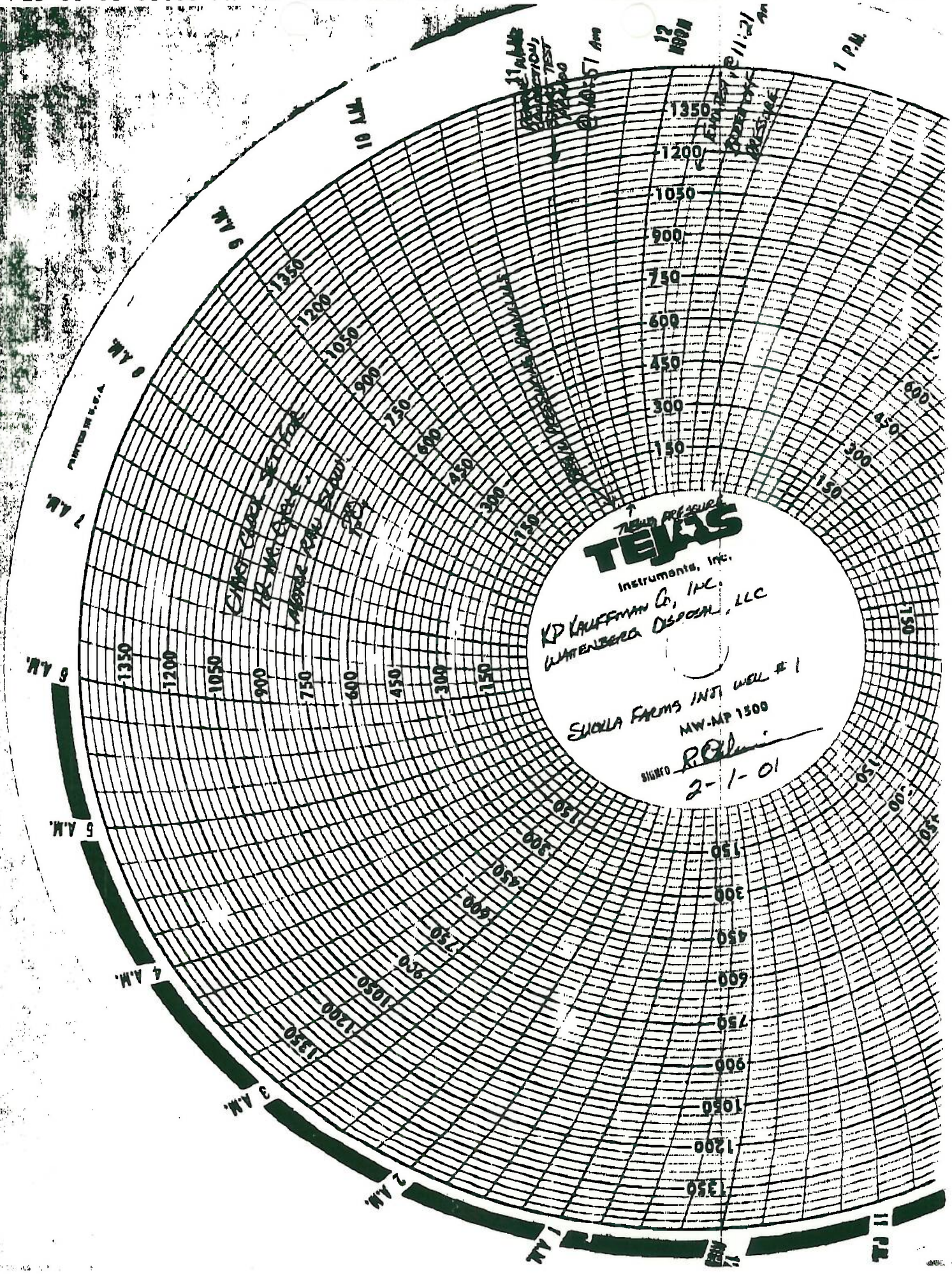
Footage	Jts.	Description of Items Run
5496.54	173	2-7/8" J-55, 6.5 lb fiberline
3499.35	110	2-7/8" N-80, 6.5 lb fiberline
1.7	1	2-3/8" x 2-7/8" x-over
1.1	1	Seating nipple
7.8	1	2-3/8" x 5.5 AS-1 Packer
9008.49		TOTAL
8		8' Under KB
9014.49		Packer set at 9014' KB

Oil used:	Water used:	Chem used:	Gals
From:	From:	Type:	0
Carrier:	Carrier:	Type:	0
		Type:	

COST ESTIMATE:

Code	Intangible	Cum	Code	Tangible	Daily	Cum
9000/862						
	Total:	0 0		Total:	0	0

CRB


TEXAS
Instruments, Inc.
KP KAUFFMAN CO, INC.
WATTENBERG DISPOSAL, LLC
SUCKLA FARMS INJ WELL #1
MW-MP 1500
2-1-01
1350
1200
1050
900
750
600
450
300
150
12 NOON
1 P.M.
6 A.M.
5 A.M.
4 A.M.
3 A.M.
2 A.M.
1 A.M.
12 MID

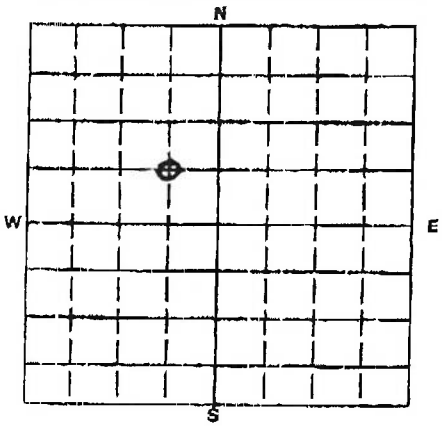
EPA

WASHINGTON, DC 20460

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
WATTENBERG DISPOSAL, LLC 1675 BROADWAY, STE. 3800 DENVER, CO 80202	KP KAUFFMAN CO., INC. 1675 BROADWAY, STE. 2300 DENVER, CO 80202

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT -- 640 ACRES



STATE	COUNTY	PERMIT NUMBER
CO	WELD	C-01516-00115

SURFACE LOCATION DESCRIPTION

SE ¼ OF NW ¼ OF ¼ SECTION 10 TOWNSHIP 1N RANGE 67W

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 500 ft. from (N/S) S Line of quarter section

and 2029 ft. from (E/W) W Line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
☒ Brine Disposal ☐ Enhanced Recovery ☐ Hydrocarbon Storage	9571'	☒ Individual ☐ Area Number of Wells 1
Lease Name SUCKLA FARMS INJECTION WELL #1	Total Depth After Rework 9571'	Well Number #1
	Date Rework Commenced 1-26-01	
	Date Rework Completed 1-31-01	

WELL CASING RECORD — BEFORE REWORK

Casing Size	Casing Depth	Cement Sacks	Cement Type	Perforations From	Perforations To	Acid or Fracture Treatment Record
8 5/8"	759'	200	"G"			1000 GAL 7½% HCL
						2000 GAL 15% FE ACID, AUG. 19, 2000
5½"	9557'	255	"G"	9276'	9418'	

WELL CASING RECORD — AFTER REWORK (Indicate Additions and Changes Only)

Casing Size	Casing Depth	Cement Sacks	Cement Type	Perforations From	Perforations To	Acid or Fracture Treatment Record

DESCRIBE REWORK OPERATIONS IN DETAIL USE ADDITIONAL SHEETS IF NECESSARY	WIRE LINE LOGS, LIST EACH TYPE	
	Log Types	Logged Intervals
PULLED TBG & PACKER, LAID DOWN 5500' OF PLAIN TUBING.		
ADDED 5500' OF FIBERLINE TUBING TO EXISTING 3500' OF		
FIBERLINE TUBING. CIRCULATED PACKER FLUID, SET PACKER.		
MIT CONDUCTED ON 2-1-01.		

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
RICK CHLEMBER COMPLETION SUP., KP KAUFFMAN CO.	R. Chlembe	2-1-01

K.P. KAUFFMAN COMPANY, INC.
FIELD OFFICE
10137 WELD COUNTY ROAD 19
FORT LUPTON, COLORADO 80621

FACSIMILE NUMBER
(303) 833-3285

If you have problems receiving this transaction, please contact us at (303) 833-5670

CONFIDENTIALITY NOTE:

THE INFORMATION CONTAINED IN THIS FACSIMILE MESSAGE IS PRIVILEGED AND CONFIDENTIAL INFORMATION INTENDED ONLY FOR THE USE OF THE ADDRESSEE NAMED BELOW. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTIONS OR COPY OF THIS TELECOPY IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS TELECOPY IN ERROR, PLEASE IMMEDIATELY NOTIFY US BY UNITED STATES POSTAL SERVICE. WE WILL REIMBURSE ANY COSTS YOU INCUR IN NOTIFYING US AND RETURNING THE MESSAGE TO US. THANK YOU.

FACSIMILE COVER LETTER

DATE: 2-1-01

TO: NATHAN WISER / AL CRAVER

NO. OF PAGES (Including Cover Sheet): 4

FAX NO.: 303/312-6409

FROM: RICK OHLEMEIER, CELL: 303/472 2753

NOTE: ATTACHED: ① MIT FORM - SUKUP FARMS INJ. #1
② PRESSURE RECORDING
③ WORKOVER REPORT

NOTE: CINDI ETCHEVERRY, WELD COUNTY HEALTH, WITNESSED TEST.
HER PHONE: 970/304-6415 EXT. 2220

WELL IS CURRENTLY SHUT-IN, WAITING ON YOUR APPROVAL OF MIT.